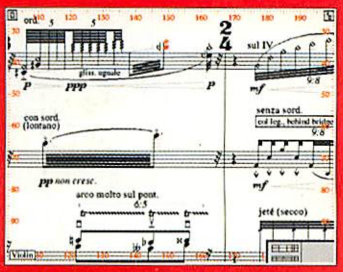
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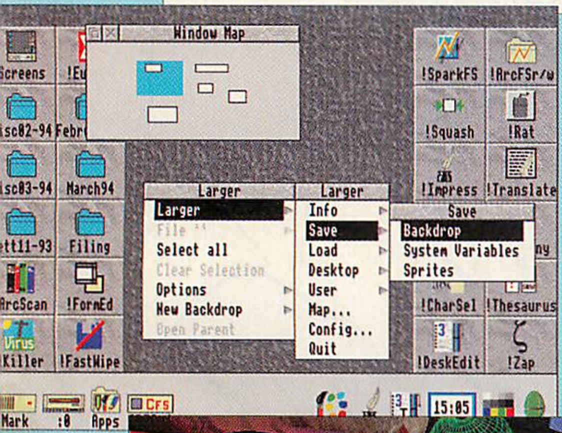
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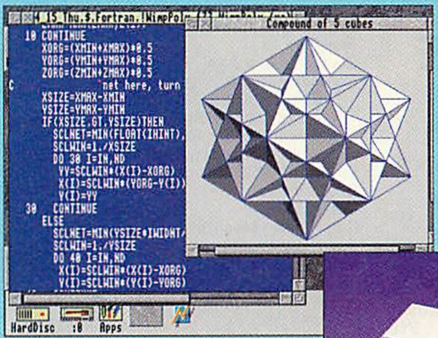
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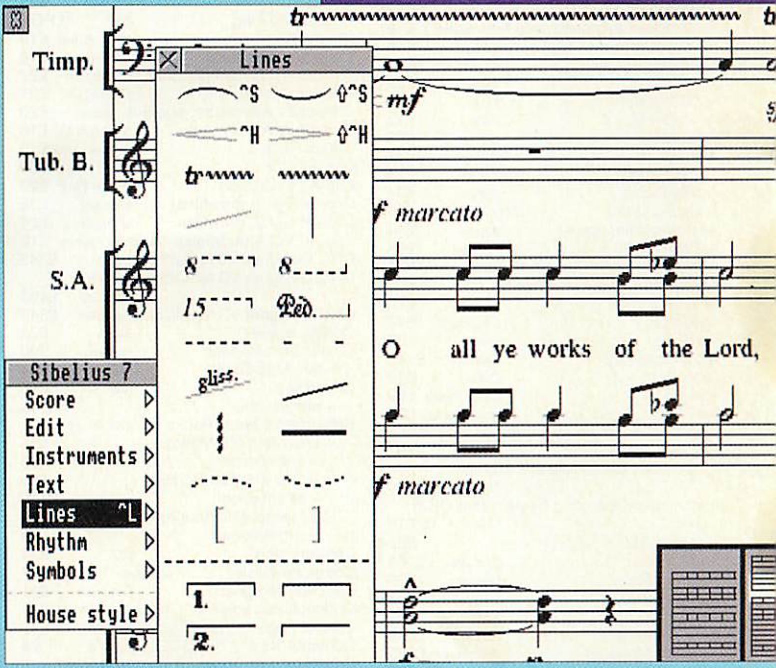
FEATURES

PROGRAMMING SPECIAL

REVIEWS







Next issue on sale 28 February

Editor's letter

Computers wouldn't be any use without programs, and programs wouldn't exist without programmers. A lot of people seem to shy away from delving into the hearts of their computers, but it really isn't as confusing as most people seem to think. Learning to program unleashes where the real power of your machine lies, and this issue is dedicated to showing you what to buy to enable you to step outside the desktop and into the challenging world of the programmer.

But that's not all. *Sibelius 6* could prove to be a stepping stone in Acorn's acceptance in the world of music publishing, and BETT '94 is shaping up to be a must for all educationalists. Read and enjoy.

Mark Moxon, Editor

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Protext	Arnor	£117
Provocator	Computer Tutorial	£15

POSTAGE IS FREE
FOR CASH CUSTOMERS IN THE UK

Puncman 1 and 2	Chalksoft	£17
Puncman 3 and 4	Chalksoft	£17
Puncman 5 to 7	Chalksoft	£18
Punctuate	Xavier	£31
Punctuate!	Topologika	£25
QDBug	Vertical Twist	£68
QPaint	CIS	£POA
Quark	Oregan	£22
Quest for Gold	Krisalis	£19
QuicKey	ICS	£10
– site licence		£30
Raw Power II	GamesWare	£16
Really Useful CD Rom Vol.2	APA	£48
Real McCoy 2	Fourth Dim	£23
Real McCoy 3	Fourth Dim	£23
Real McCoy 4	Fourth Dim	£27
Recall, age 8-13	Sherston	£37
Redshift	Minerva	£10
RemoteFS Parallel Port	Atomwide	£50
Render Bender 2	Clares	£77
Rephorm	Oak	£47
Repton 3	Superior	£19
Resultz	Colton	**£97**
– secondary site licence		£470
Revelation 1	Longman	£39
Revelation 2	Longman	£75
Revelation 2 CD Rom	Longman	£98
Revelation ImagePro	Longman	£127
Reversals	Chalksoft	£17
Rhapsody 2	Clares	£44
Rhapsody 3	Clares	£79
Rhythm-Bed	Clares	£38
RhythmBox II, age 8+	EMR	£34
RiscBASIC Compiler	Silicon	£77
RiscForth Compiler	Silicon	£72
RISC OS 3 First Steps	Dabs	vo £15
RISC OS 3 Programmer's Reference Manual	Acorn	vo £99
RISC OS Companion Vol 1	Oak	vo £49
RISC OS Style Guide	Acorn	vo £13
RoboLogo	Silicon	£38
Round the World Yacht Race, age 9+	Storm	£25
Saloon Cars Deluxe	Fourth Dim	£25
– Deluxe Extra Courses		£14
S-Base 2 Developer	Longman	£193
S-Base 2 Developer Plus	Longman	£350
S-Base 2 Personal	Longman	£119
S-Base Network	Longman	£275
Schedule	Acorn	**£20**
Schema	Clares	£95
Schema 2	Clares	£POA
Science, drawfiles	Micro Studio	£25
Score Draw	Clares	£44
Scorewriter PMS Desktop, age 12+	EMR	£147
ScreenPlay	Widgit	£35
ScreenTurtle version 2	Topologika	£45
Search and Rescue, age 9+	Storm	£27
Seashore Guide, drawfiles	Micro Studio	£16
Seelinks – Ourselves, KS1,2	ESM	£27
Seelinks – Pond Watch, KS2	ESM	£35
Seelinks – Tourism, KS3	ESM	£55
Seelinks – Transport, KS2	ESM	£35
Sensible Soccer	Renegade	£POA
Serenade	Clares	£106
Serpents	CIS	£POA
Settlement, KS3	ESM	£31
ShapeFX	Data Store	£10
ShareHolder	Silicon	£96
ShareHolder Professional	Silicon	£164
Shares	Apricote	£33
ShowPage	CC	£143
Shylock Gnomes, age 10-15	Selective	£16
Sim City	Krisalis	£22
Simon the Sorcerer	GamesWare	£31
SkyHunter	Longman	£22
Sleuth	RISC	£42
smArt	4mation	£50
smArt Aliens, Animals, Dinosaurs, Egypt, Europe†, Faces*, Fantasy, Fashion, Fiddles & Drums, Heraldry, Homes*, Leisure*, Look Smart, Smartoons, Trees and Gardens *English/French/German/Spanish/Welsh; †English/French/German; please specify – each	4mation	£15
smArtFiler	4mation	£32
smArt Modern Languages	4mation	£19
Smudge the Spaniel, age 4-8	Storm	£20
Snippet (new version)	4mation	£32
Soapbox	Xavier	£34
SolidCAD	Silicon	£77
SolidsRender	Silicon	£77
SolidTools	Silicon	£204
– education price		£194
SongBook, age 3-10	EMR	£24
Sound Engineer, age 12+	EMR	£59
Sound-FX Maker	CIS	£POA
Sound-FX Maker & Photopia	CIS	£POA
Sounds & Rhymes	Xavier	£29
Spark	David Pilling	£5
SparkFS	David Pilling	£20
Sparkle	Morley	£59
Special	ICS	£10
– site licence		£30
Speech!	Superior	£18
Spelling week-by-week	Chalksoft	£20
Spex	ExpLAN	£98
Spheres of Chaos	Matt Black	£19
Splash, age 7-11	Sherston	£19
Splice	Ace	£34
Split an Image, age 7-16	Sherston	£19
Spoken Word	Wyddfa	£16
Spooler	Computer Tutorial	£9
Sporting Triangles	CDS	£19
SportsDay	Selective	£20
SportsPeople	Selective	£20
SpriteEd	Computer Tutorial	£17
SpySnatcher	Topologika	£12
Square Route	Computer Eyes	£16
Squirrel 2	Digital Services	£127
– site licence		£545
Squirrel C Developer's Toolkit	Digital Services	£96
Starspell Plus	Fisher-Marriott	£19
StartWrite	Icon	£55
StockPack	Topologika	£37
StoryBook, age 3-10	EMR	£59
Striker	GamesWare	£21
StrongED	Stallion	£22
Studio24Plus Version 2, age 11+	EMR	£149
Studio24Plus Version 3, age 12+	EMR	£210
Stunt Racer 2000	Fourth	£25
SUMthing	Resource	£24
SuperDump	Silicon	£20
Superior Golf	Superior	£14
SuperPlot	Silicon	£20
Swiv	Krisalis	**£9**
TABS	ExpLAN	£95
Talisman	Minerva	£8
Talking Pendown	Longman	£54
Talking Pictures	Wyddfa	£16
Talking Rhymes	Topologika	£37
Target Maths	Triple R	£15
Technodream (Nevryon 2)	Superior	£19
TechWriter	Icon	£159
Thinklink	Xavier	£29
ThinkSheet	Fisher-Marriott	£38
Thundermonk	Minerva	£11
Tiles	Brain Games	£16
Timeshare	Fisher-Marriott	£19
Timetabler	Minerva	£549
Time Traveller, KS2	ESM	£37
– Britain Since the 1930s, KS2		£30
– Expansion, Trade and Industry, KS3		£36
– Making of the United Kingdom, KS3		£36
– Medieval Realms, KS3		£36
– The Victorians, KS2		£30
TinyDraw/TinyPuzzle	Topologika	£34
TinyPuzzle	Topologika	£24
Titler	Clares	£115
Tools Graphics, drawfiles	Micro Studio	£23
Topographer	Clares	£61
Touch Type	Iota	£38
Tower of Babel	Cygnus	£17
Trace	David Pilling	£5
Tracer	Midnight	£46
Transfer2	Apricote	£16
Transport, drawfiles	Micro Studio	£25
Turbo Type	CIS	£POA
Turbo Type, Sound-FX Maker, E-Numix	CIS	£POA
Tween	Ace	£35

ICS
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TWO (Task and Window Organiser)	ICS	£10
– site licence		£30
TypeStudio	RISC	£38
Utility Disc 1	Data Store	£8
Utility Disc 2	Data Store	£13
Utility Disc 3	Data Store	£7
Utility Collection	Data Store	£21
Vector	4mation	£75
Victorians, age 7-11	Sherston	£POA
View»Mac 3	Human	£65
– Arc/Mac Cable	Human	£24
Viewpoints, age 7-11	Sherston	£37
Virtual Golf	Fourth Dim	£25
Visual Backup	Dabhand	£39
Vox Box	Clares	£44
Waiter	Digital Services	£35
Waterloo (not OS 3.1)	Turcan	£19
Whale Facts	Topologika	£31
Wordbank	Topologika	£25
Words and Pictures	Chalksoft	£19
WordWorks	CC	£36
Wordz	Colton	**£77**
World Geography Maps, draw	Micro Studio	£23
WorldMaker, KS3,4	ESM	£51
World Map Study, KS3,4	ESM	£61
World Wildlife, sprites	Micro Studio	£16
Worra Battle	Oak	£15
WorraCAD	Oak	£79
Xenon 2	GamesWare	£21
Yacht 2	Computer Tutorial	£49
Yacht 7	Computer Tutorial	£94
Zarch	Superior	£14
Zelanites (not OS 3)	Micro Power	£15
Zool	Gremlin	£19

HARDWARE

COMPUTERS . . .

A3010 Action Pack	Acorn	£335
A3010 Learning Curve System	Acorn	£599
A3020 FD System	Acorn	£650
A3020 HD60 System	Acorn	£775
A4 2M FD System	Acorn	£1350
A4 4M HD60 System	Acorn	£1650
A4 Battery Pack	Acorn	£53
A4 Shoulder Bag	Acorn	£37
A5000 2M HD80 Multiscan System	Acorn	£1225
Pocket Book	Acorn	£POA
– Class Pack		£POA

PRINTERS . . .

A4-1200/1 Direct Drive Laser Printer	Calligraph	£989
Bubble Jet BJ-10sx	Canon	£187
Bubble Jet BJ-10sx + TurboDriver	Canon/CC	£219
Bubble Jet BJ-230	Canon	£315
Bubble Jet BJ-300	Canon	£325
Bubble Jet BJ-330	Canon	£380
Bubble Jet BJC-600 + TurboDriver	Canon/CC	£535
Bubble Jet BJC-800 + TurboDriver	Canon/CC	£1374
DeskJet 500C	Hewlett-Packard	£279
DeskJet 510	Hewlett-Packard	£235
DeskJet 550C	Hewlett-Packard	£455
Laser Direct HiRes4 + Impression	CC	**£799**
– 250-sheet Paper Cassette		£99
Laser Direct HiRes8 + Impression	CC	**£1050**
Laser Direct HiRes Board	CC	£325
New toner cartridge for Canon LBP-4		£59
New toner cartridge for Canon LBP-8		£75

For ordering details please turn to page 3

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SCANNERS, DIGITISERS . . .

Colour Converter	*Lindis*	£145
Eagle M2	*Wild Vision*	£POA
FaxScan	*Spacetech*	£94
GreyHawk	*Wild Vision*	£98
Handipad	*TechSoft*	£193
Hawk V9 MkII	*Wild Vision*	
– standard		£199
– hardware dithered		£259
HiVision Digitiser Colour	*HCCS*	
– A3000 External		£137
– A3000 Series / A4000 Internal		£124
– A5000 / 300 / 400		£124
iMage (Sharp JX-100)	*Irlam*	
– for A5000		£490
– for other computers		£589
Image Scanner	*Iota*	£383
– Colour Upgrade Kit	*Iota*	£239
– Fast Parallel Card	*Iota*	£98
Pineapple Colour Video Digitiser	*Pineapple*	£195
– A3000 boxed	*Pineapple*	£230
ProImage (Epson GT6000)	*Irlam*	
– for A5000		£989
– for other computers		£1089
Scan-Light A4	*CC*	£277
Scan-Light 256	*CC*	£185
– A3000 External	*CC*	£190
– A3000 internal	*CC*	£190
Scan-Light Professional	*CC*	£565
– as above + SCSI interface	*CC*	£699
Scan-Light Video	*CC*	£208
– A3000 Series internal	*CC*	£208
Spectra	*RISC*	
– A3000 Series / A4000 Internal		£545
– A3000 External		£555
– Archimedes / A5000		£545
Vision Digitiser	*HCCS*	
– A5000 / 300 / 400 Mono		£48
– A5000 / 300 / 400 Colour		£76
– A3000 External Mono		£60
– A3000 External Colour		£89
– A3000 Series /A4000 Internal Mono		£48
– A3000 Series / A4000 Internal Colour		£76

MISCELLANEOUS. . .

386 PC Expansion Card 25 MHz	*Aleph One*	
– 1 Mb		£POA
– 4 Mb		£POA
486 PC Expansion Card	*Aleph One*	
– 1 Mb		£POA
– 4 Mb		£POA
4-slot 4-layer Backplane	*IFEL*	£52
5315 Monitor	*Aydin*	£425
A300/400 Fan kit	*ICS*	£15
A3000 Expansion Box	*Wild Vision*	£135
A5000 Fitting Kit for second hard disc	*ICS*	£15
AnDi Oddule	*Baildon*	£39
Arckey Function KeyStrip Holder	*ICS*	V0 £3
– pack of 4		V0 £10
ArcNET	*ACS*	£69
ARM3 ‡	*Aleph One/IFEL*	£165
Arm_Stick	*Arm_Tech*	£28
ColourBurst	*State*	£374
ColourCard Gold	*Wild Vision*	£225
– A3000 External	*Wild Vision*	£225
Dongle Dangle with screw fittings	*ICS*	£6
Ergo-keyboard	*Castle*	£99
Fan filters (pack of 10) (not A5000)	*ICS*	£6
FaxPack	*CC*	£289
Floating Point Accelerator (A5000 + A540)	*Acorn*	£93
Floppy Discs, 10 × 3½" High Density		£10
Four-Colour Refill Kit		£30
HiPoint Mouse for A4	*Genius*	£49
I²C Adaptor	*Baildon*	£10
I²C SWI (enhanced IIC_Control)	*Baildon*	£15
– bought with AnDi Oddule		£5
ideA Removable Hard Disc Fitting Kit for A5000	*ICS*	£25
Microlin fx Pocket Fax Modem	*Pace*	£179
Micro Mouse	*Clares*	£26
Midi Expansion Card	*Acorn*	£80
Monitor Stand for A3000	*ICS*	£21
Mono/SCSI	*Atomwide*	£48
Podule Case for A3000	*HCCS*	£16
Power Pad (Dual)	*GamesWare*	£34
Power Pad (Single)	*GamesWare*	£25
Printer Port Sampler	*Vertical Twist*	£39
Printer/SCSI	*Atomwide*	£74
Publishing Pack	*CC*	£475
Revolution CD-ROM	*Morley*	£295
Revolution Pro (for SCSI system)	*Morley*	£435
RISC OS 3 Carrier Board for A310‡	*IFEL*	£18
RISC OS 3 Upgrade	*Acorn*	£75
Seal 'n Type spill-proof Keyboard Covers		
– Archimedes / A5000	*Kador*	£14
– A3000	*Kador*	£14
TouchWindow	*Lindis*	£234
Whisper Fan Quietener (for A300/A400 series only)	*ICS*	£15
Wizzo IDE Filing System on rom	*ICS*	
– Wizzo4 for A4		£POA
– Wizzo5 for A5000		£39
Wizzo SyQuest Complete Package		£335
– Extra 105 Mb Disc		£60

MEMORY . . .

Fitting extra unless otherwise stated
† Fitting fairly easy ‡ Fitting needs expertise

A3000 2 Mb Upgradable †	*Atomwide/IFEL*	£58
A3000 4 Mb †	*Atomwide/IFEL*	£120
A3010 1-2 Mb		£39
A3020 / A4000 2-4 Mb †		£80
A310 2 Mb Upgradable soldered ‡	*IFEL*	£94
– as above + MEMC1a		£119
– as above + MEMC1a + fitting		£149
A310 4 Mb soldered + MEMC1a ‡	*IFEL*	£159
– as above + fitting		£189
A5000 2-4 Mb †	*Atomwide*	£85
A5000 2-8 Mb including fitting	*Atomwide*	£500
A5000 4-8 Mb including fitting	*Atomwide*	£391
A540 4 Mb †	*Acorn*	£238

Do you

use an A5000?
need to back-up data quickly?
need to carry data from one computer to another?
wish you could lock important data away easily?

Could you use 105 Mb floppy discs?

We've got some. They should really be called removable hard discs, but the difference is academic. Just install one of our SyQuest kits in your A5000 as though it were a second floppy disc drive. Now you can use 105 Mb removable discs as if they were fast floppies.

Removable discs cost about the same per megabyte as traditional floppies. Our complete package includes a drive, a fitting kit and one 105 Mb disc, formatted and tested. No soldering is required.

Each ICS kit also contains a special version of Wizzo - our own IDE filing system on rom. Acorn's filing system does not support removable hard discs (you would need to reset the machine every time you removed a disc).

Only Wizzo supports the SyQuest option.

WIZZO (it's magic)

And gives you disc partitions, password protection, and the ability to access more than 512 Mb of storage.

WIZZO SYQUEST COMPLETE PACKAGE £335

ADDITIONAL 105 MB DISCS £60 EACH • FITTING KIT ONLY £25

Wizzo5 owners: please return your rom in its original packaging and deduct £10.

HOW TO ORDER

VAT: Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.

Overseas carriage: If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

Credit cards are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

Official orders are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

Site licences are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.

AUTHORISED ACORN DEALER

ICS (Ian Copestake Limited)

Dept B51, 1 Kington road, WIRRAL, Merseyside, L48 5ET

Tel: 051-625 1006 Fax: 051-625 1007

E&OE D61 931206

LICENSED CREDIT BROKER

Acorn goes into Xmas overdrive

ACORN has shrugged off the embarrassment of the withdrawal 'Home Computer Minefield' video which supported the first phase of its Christmas sales campaign.

At the time of writing, Acorn is well into Phase 2 of its campaign which concentrates on a video called 'Computers in Education - A Guide for Parents' which was produced in association with The Sunday Times.

National press advertising, backed up by 1,000 strategically positioned posters at key high street sites, invites parents to request a free copy of the video.

They will also receive a free copy of *The Games Review*, a guide to the top 100 Acorn games titles selected by *Acorn User*, along with an *Advance* integrated software demo disc.

In addition to Acorn's specialist independent computer dealers, Tandy, Rumbelows, Argos, John Lewis, Tempo, Fona and Fenwicks stores are stocking Acorn computers and are taking part in the Acorn sales campaign.

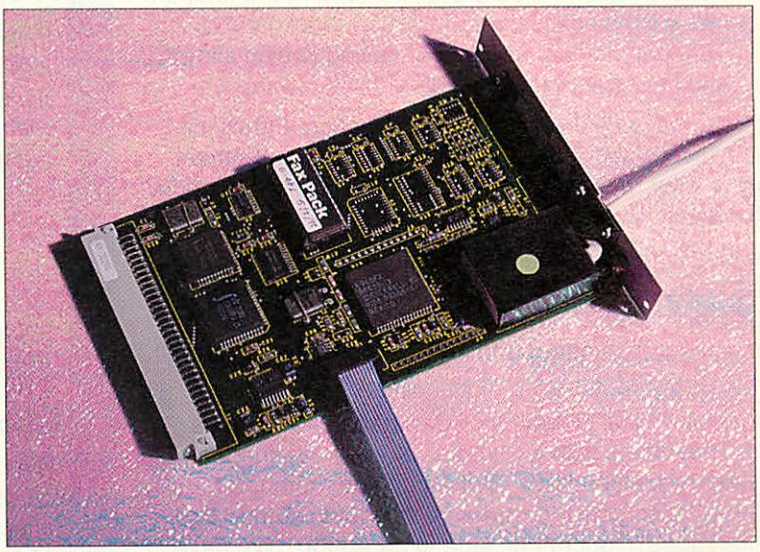
Richard Percy, Acorn's consumer general manager, commented: 'We have already seen an increase in sales and a heightened public profile for Acorn as a result of our strong marketing push.

'With Phase 2 of the campaign our objective is to make sure that families looking for a home computer this Christmas put Acorn top of the list, by positioning our computers as the best for edutainment and home office needs. By boosting momentum now, we will stay firmly in the public eye into the New Year and beyond.'

- A £100 rebate scheme was offered to schools during November and December to boost sales of the new 33MHz version of the A5000. Every school was mailed details of the deal, which ended on December 24th.

FAXPACK TO BE DISCONTINUED

COMPUTER Concepts is being forced to discontinue manufacturing its FaxPack fax card for the Archimedes. According to CC's Charles Moir, the reason is because key components have recently risen dramatically in price, especially the card's line interface transformer. The Rockwell chip set used in FaxPack is now discontinued and though supplies are still available, prices have also risen.


Computer Concepts' FaxPack has now been discontinued

About a thousand of the innovative fax cards, which also have a FaxPack to FaxPack file transfer capability, have been sold so far and there is still demand, but production costs have become uneconomic.

Charles Moir says that batches in the region of about a hundred could still be made if more reasonably priced components could be obtained, and if a customer was desperate enough to obtain a number of the cards and was willing to pay an inevitably inflated price. For example, Acorn is thought to be interested in obtaining a quantity of the cards.

In the meantime, CC will update the FaxPack printer driver software to full Risc OS 3.1 compatibility and make this available as an upgrade to existing users. However, there are no plans to add much-requested features like remote message interrogation using DTMF tone phones.

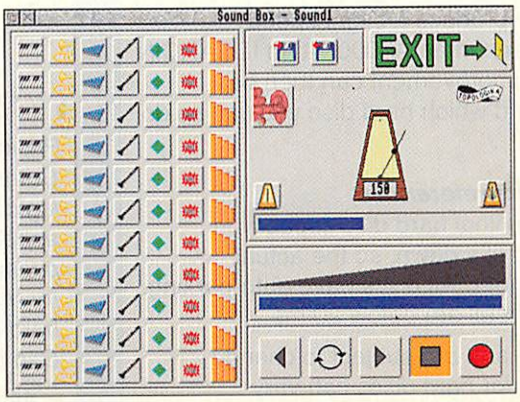
It's ironic that a pioneering voice/fax-modem product like FaxPack is about to be shelved as the general computing world looks set to embrace much the same technology with next-generation voice modems.

Charles Moir says the cost of redesigning FaxPack to use new components and getting BABT approval is too much and though the answer could be CC software support for new voice-enabled modems, Moir says unless there is enough demand, his programmers have higher priorities within the company.

Computer Concepts is on (0442) 63933.

Topologika's Music Box

MUSIC is the subject of a new Archimedes educational package from Topologika called *Music Box*.



The package contains four distinct areas for primary age children to explore. *Sound Box* lets users play with up to 7 different instruments at one time, *Beat Box* is a simple drum machine, *Chord Box* enables short sequences of notes to be strung together and *Tune Box* is for longer and more complex compositions laid out on a grid.

Ease of use is one of *Music Box*'s main features and no technical knowledge or musical experience is required.

Topologika says that *Music Box* covers much of the requirements of Attainment targets 1 and 2 at Key Stages 1 and 2 of the National Curriculum Music Document.

Music Box is priced at £35 + VAT for single users, £60 for a primary school site licence, £70 for secondary schools and £105 for a teacher training site licence. For more information contact Topologika on (0733) 244682.

ICS WIZZO (it's magic)

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The ideA range

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 45 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: IDEA3IN for the A3000 Series, and IDEARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

IDEA3IN upgrade kits include an I^2C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. You may safely take no notice of rumours still being spread that internal upgrades might not be safe in an A3000. We have adhered carefully to the guidelines in Acorn's technical specifications, and in three years have never come across a problem.

IDEARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an IDEARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

How to read our ideA product references

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

Archimedes A300/A400/A500 Series Internal Upgrades

Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane is used it must be a 4-layer type. Easily fitted by most users.

IDEARCIN 40*	£175	IDEARCIN 330	£399
IDEARCIN 80*	£205	IDEARCIN 420	£499
IDEARCIN 170	£275	IDEARCIN 540	£650
IDEARCIN 240	£325	IDEARCIN 1000	£925

A3000 Series Fully Internal Upgrades

Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.

IDEA3IN 40	£175
IDEA3IN 80	£250
IDEA3IN 120	£299
A3000 FAN KIT (not usually required*)	£19

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

Separates for hard disc upgrades

We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.

Hard discs on their own are listed as, for example, IDEA 80. An S at the end indicates a 2½" disc.

IDEARCIN (Archimedes Interface for Internal disc(s))	£60
IDEA3IN (A3000 Interface for Internal disc)	£75
ARCHIMEDES INTERNAL CRADLE KIT	£15
ARCHIMEDES A300 / A400 SERIES FAN KIT	£15
4-SLOT 4-LAYER BACKPLANE	£52
POWER CABLE FOR SECOND HARD DISC	£5
A5000 SECOND HARD DISC FITTING KIT	£15

IDEA40*	£125	IDEA330	£349
IDEA80*	£155	IDEA420	£449
IDEA170	£225	IDEA540	£600
IDEA240	£275	IDEA1000	£875

IDEA40S	£115
IDEA80S	£190
IDEA120S	£239

WIZZO IDE Filing System on rom

Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.

Available now: WIZZO5 for A5000	£39
Available soon: WIZZO4 for A4	POA

Quantity discounts available • Dealer enquiries welcome

** Lower-capacity 3½" discs are now very hard to obtain. Please check availability before ordering.*

ICS (Ian Copestake Limited), Dept B50, 1 Kington road, WIRRAL, Merseyside, England, L48 5ET

AMULET PROVES ASYNCHRONOUS METHODS

RESULTS from the first prototype of Manchester University's 'asynchronous' version of the Arm6 processor core, called Amulet, are now being analysed.

The Amulet project, headed up by Professor Stephen Furber – who co-designed the first Arm processors when he was working at Acorn in the mid 1980s – aims to determine whether asynchronous processor technology, or computing without clocks, can offer superior solutions to conventional clock-based processors.

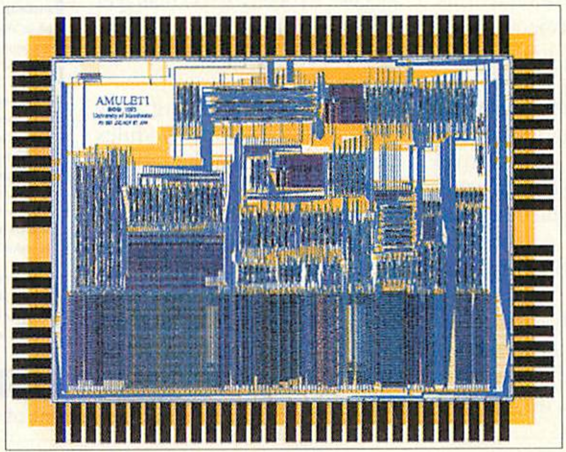
Theoretically, asynchronous chips might operate faster and yet consume less power than their conventional synchronous counterparts.

Furber summarised the results so far: 'Amulet1 answers the question: "Can you build something as complex as an Arm processor using async techniques?". The answer is yes, though we'd like to see working silicon to confirm that it really does everything we think it does.

'The power and performance figures are somewhat worse than Arm6, though this is comparing a first go at an async design with a fourth go at a clocked one (and the world class leader for low power); it would compare quite well with Arm1.

'We shipped the tape in February 1993, and haven't stood still since then, so I expect Amulet2 to be competitive. I'm certainly not concluding that async is no good just because our first go at designing it is a bit worse than a very refined clocked version.

'The numbers indicate that Amulet1 is a factor 2 worse than Arm6 in area, and about 50% worse in speed and speed/power. The area cost is due to the more sophisticated architecture of the async part, which should lead to significantly better performance, but doesn't because of a couple of bottlenecks (we know relatively little about how to organize loosely coupled concurrent pipelines compared with regimented clocked pipelines).



Amulet1 compares well with Arm1

'Since February we have found new latch structures which are three times as fast and twice the speed/power as the ones on Amulet1, but there are still some tricky organisational problems to crack before we can demonstrate a win for async design.

'What we have achieved is to demonstrate that async approaches can cope with the complexity of real systems; we have yet to show that there is a win in using them, though I think we are fairly close to doing that.'

There is a long way to go before we can expect an Amulet-based Archimedes, but should development of the technology prove successful, Acorn could be one of the first computer manufacturers in a position to benefit. Keep your eyes on these pages.

Somerset Talking Computers

BETWEEN June 1992 and July 1993 staff from Somerset Education Services carried out a research project using computer-generated speech on Archimedes computers. The aim was to try to improve the reading skills of 200 pupils aged between 6-15 in 25 different schools across the county.

The results astonished the researchers. 'The results were phenomenal, we couldn't believe it,' said Mike Bolton, a Somerset advisory teacher and co-founder of the project. Reading ages accelerated by two-and-a-half times and auditory short term memory improved even more spectacularly. And the benefits have proved to be long lasting, giving the children more esteem, the ability to concentrate harder and to develop their basic learning skills better.

The Somerset project involved prompting individual children to read a short set of phrases and recall the phrases with the help of a talking word processor, which has since become Longman Logotron's *Talking PenDown* word processor. A report published in the press early in 1993 prompted over a thousand enquiries from schools nationwide and abroad.

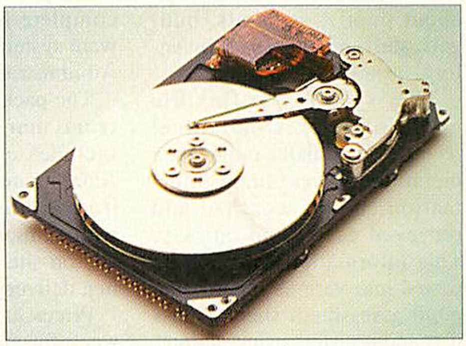
Now Longman Logotron has published learning materials developed from the project which can be used in conjunction with *Talking PenDown*. Another useful by-product is that pupils rapidly gain good keyboard skills.

Mike Bolton explained that the Archimedes had been chosen for the project as it was the official schools computer for Somerset LEA and the most widely used computer in schools nationwide. Another reason is that no extra hardware is required to enable speech functionality on the Archimedes.

The Somerset Talking Computer Project Learning Materials pack is priced £29 + £3.53 p&p. Longman Logotron can be contacted on (0223) 425558.

Upgrade to IBM?

CONNER, Western Digital, Syquest and Quantum are some of the more familiar hard disc drive brands available . Now IBM is inroducing new advanced hard drive technology to spearhead its entry into the OEM or 'own equipment manufacture' market.


The future of hard drive technology

This is a relatively new move for IBM which, until recently, designed and manufactured its own hard drives for use in IBM-branded computers almost exclusively. IBM has developed a new drive head technology called magneto-resistive, or MR for short; unlike a conventional hard drive read head, an MR head is not dependent on the rotational speed of the disc platter.

This is good news for the reliability and efficiency of today's tiny 3.5in and 2.5in and smaller diameter hard drives.

The technology also enables more data to be packed into a given area of the hard disc surface. Despite its lead in MR head technology, IBM is keen to compete in the cut-throat OEM market, so 1994 should see competitively priced IBM hard drives for sale alongside the usual brand names, as well as fitted to new non-IBM computers. IBM drives using MR head technology are available in both IDE and SCSI versions.

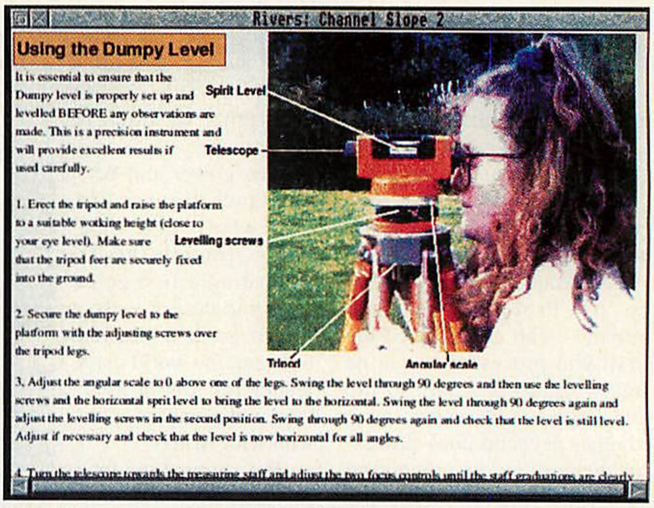
EXPANDING HORIZONS

ACORN has released the results of a huge project it supported which was undertaken by schools across Hampshire to create multimedia presentations. Teachers and students from over 50 Hampshire schools took part in the Horizon Project, which set out to explore the full potential of multimedia authoring in schools.

Multimedia authoring tools were provided to those taking part in the project and the results have been declared a success by Tony Cox, manager of the Horizon Project at the Hampshire Microtechnology Centre.

Over 80 interesting new multimedia resource modules have resulted from the project, covering all areas of the National Curriculum.

A full report on the project has been published by Acorn, and next month in *Acorn User* we'll be taking a look at the results of the scheme, and evaluating its success.



One of the many modules resulting from the project

Administrating schools the PIMS way

AT BETT '94 Acorn and Longman Logotron are to launch *PIMS* (Primary Information Management System), an administration system for primary schools which runs on Acorn computers. *PIMS* has been under development for some time, according to Acorn, benefitting from extensive surveys and user-trials.

It's an integrated system which can store information about pupils, accounts, budgets, staff, maintenance, inventory, insurance, and so on.

The system is flexible because it stores individual records relationally rather than hierarchically, meaning information can be searched and retrieved easily and quickly. This information can then be pasted into various reports like pupil assessment sheets, class lists and registers using an integral reporting module.

As *PIMS* is a Risc OS application it can work concurrently with other programs. Schools currently using the established *SIMS* system, which was developed for secondary schools, can transfer their data directly to a new *PIMS* system. Information can still be presented in *SIMS* format if required.

PIMS will be available from January 12th through selected Acorn Education dealers, either separately as a standalone package or as part of a complete hardware and software system called the Primary Administration Package.

The package was formulated from market research and includes either an A4000 or A5000 computer, SVGA monitor, printer, *PIMS* software with 12 months hotline support and on-site maintenance, training, delivery and installation.

Prices can start from £17 a week for an A4000-based system. Further information on *PIMS* is available from Acorn's free Education Hotline on (0800) 400800.

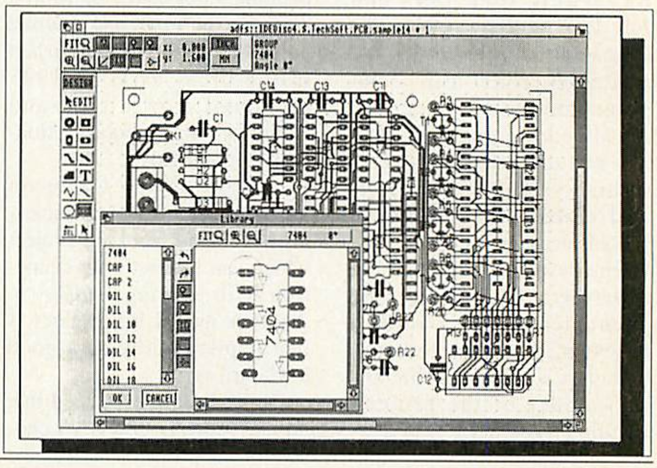
Life in the Fastrax

TECHSOFT is to launch its new printed circuit board design and development package, *Fastrax*, at BETT '94. Previewed at Acorn World, *Fastrax* is an integrated schematic PCB design editor.

A Library facility enables frequently used components to be stored for later access, and user-defined components and whole circuits can also be stored in the library and later pasted into new designs.

Fastrax is able to import *Draw* files too, and can produce colour coded multi-layer boards and silk screen schematic layers. There is no practical limit to the physical size of a board design or the component count, tracks can be drawn at any angle and pads or tracks can be user-predefined.

Fastrax will cost £75 + VAT and a site licence for up to 30 users is priced £195; a demonstration disc is also available. For more information contact TechSoft on 082-43 318.



Frontier 2000 wins prestigious award

ST IVES-based Cambridgeshire Software House and the Tullie House Museum of Carlisle have been awarded an 'Oscar' of the museums and galleries world, a Gulbenkien award, for work which contributed to the production of the *Frontier 2000* multimedia package for the Archimedes.

Frontier 2000 is a disc-based multimedia humanities software package which was converted to CD-Rom at the end of 1992. The package is based around the City of Carlisle and covers the Border regions of Dumfries and Galloway as well as North Cumbria.

Chronological coverage is from as early as 43AD to 1981 and thoroughly explains the way of life in the regions during that period.

The award, which was presented at a ceremony at the British Museum in London, was for the 'Most Imaginative Education Work' category. CSH partner Brian Richardson commented: 'We are delighted to have won this award.

'We spent three years researching and developing *Frontier 2000* and to receive professional recognition in this way vindicates our policy of producing well thought out and educationally sound software.'

Cambridgeshire Software House can be contacted on (0480) 467945.

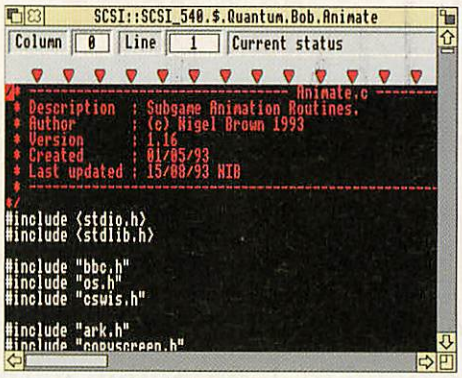
MAGICAL NEW EDITOR

The Serial Port is expecting to make its new programmer's editing package, *Sourcerer*, available early in 1994. *Sourcerer* is suitable for almost all programming languages and supports macros and source browsing for easy access to important sections of code.

One of *Sourcerer*'s main features is called 'spells'. The spell system allows you to manipulate source code using any number of functions written in ANSI C, which means *Sourcerer* can be customised and extended to suit your needs. A number of pre-programmed spells are included as standard.

Large files are catered for using a feature called 'folding' and there is a language dependent expression evaluator. As there is support for most programming languages, the user isn't tied to the peculiarities of different compilers or assemblers.

Other key features include hard tabs in code, 24-bit colour capability in source code, anti-aliased font support, recognition of Acorn DDE's Throwback facility, and project support allowing the user to set up the desktop for development work with open directories and installing other tools, etc. A PD demo version of *Sourcerer*, with the save and print functions disabled, will be made available shortly. Firm pricing hasn't yet been decided on, but a figure of around £50 can be expected. For more information contact The Serial Port on (0749) 670058.



Sourcerer's main editing window

Octopus No.2

ALAN Afriat Associates is the second company to bring news of an Acorn expansion card called Octopus, the other being Ashiv with its serial port (see last month).

'The first I knew about another Octopus in the sea was at the Acorn World show,' said Alan Afriat, who added that he might consider changing the name of his product to 'Octet'. Apparently both companies managed to register the name independently with Acorn.

The Afriat card is a dedicated audio/video edit controller which can be hooked up to any editing machines, DAT recorders and so on, which conform to Sony RS422 protocols.

Up to four devices can be controlled with one card and four cards will provide control of up to 32 devices. Four GPI outputs and sync referencing are provided for triggering AV machines. Various drivers for vision mixers and other video editing hardware are in the pipeline.

A complete Octopus-based editing system will be available for hire, and AAA's Octopus should be making its debut swim after Christmas. For further information on the Octopus, contact Alan Afriat Associates on 081-789 2663.

Almanac reorganisation

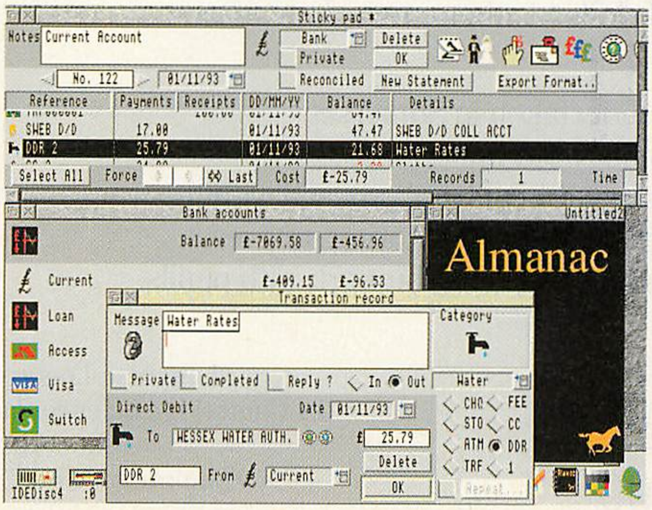
JUST five months after producing release 2 of its *Almanac* desktop business and personal organiser package, Stallion Software has now come up with *Almanac 3*. The new release has another revised look to match Acorn's *Newlook* 3D desktop for Risc OS and a new Bank Accounts module.

A Home Accounts module can generate simulated bank statements which can be reconciled with actual statements once they are received. Another new feature is that chains of correspondence can now be linked together.

Almanac 3 is priced at £85 and existing users can upgrade for £17.62 by returning their original program disc.

At the same time, Stallion has released *StrongEd 3* (see review on page 43) which can now handle regular search expressions, show a *Chars* window, sort procedure lists, jump to procedure definitions and has enhanced configuration boxes.

StrongEd 3 upgrades are available free to users returning their original disc plus a first class stamp. Finally, *Lexicon 2* has been reduced in price to £39. Stallion Software is on (0225) 339090.



Almanac's new Home Accounts module

IN BRIEF

Microbits

Coventry has a new Acorn dealer with the appointment by Acorn of Microbits. According to Acorn area sales manager Tim Beeby, Microbits is the first of a number of new consumer dealers being appointed by Acorn. Microbits can be contacted on (0203) 367283 and is on the A444 Longford Road in Coventry.

Etch your screen

Just like you should get your car's windows number-plate etched to dissuade thieves, why not do the same with your computer monitor?

The Etching Transfer Company provides just such a service for just £20 plus a small lineage charge. For more information, contact The Etching Transfer Company on (0903) 244642.

Low cost refills

Low cost ink-jet cartridge refills for Canon CLC-10, BJC-800, Epson Stylus 800 and HP Deskjet 1200C printers and others are available from System Insight in Welwyn Garden City.

Acorn User readers quoting the reference 'Acorn User RB20' when ordering are promised a further 10% discount. System Insight can be contacted on (0707) 395500.

Thesaurus news

- *Desktop Thesaurus* has been enhanced by Risc Developments. Antonyms (opposite meanings) are now supported. 17,450 key words are now recognised from a dictionary of 200,000 in total. Pricing remains at £19 + VAT.
- Special site licences for small primary schools limited to up to 15 users are now being offered by Risc Developments for their software packages. For example, the primary school licence for *Ovation* DTP is now £250 + VAT compared with a full site licence of £475. Risc Developments can be contacted at (0727) 840303.

'The Crystal Maze is fantastic. The graphics and sound are stunning, the puzzles and games are very playable and challenging, and the presentation and packaging are of the highest standard. What's more, it provides all the excitement and entertainment of the TV show.'

RISC User, December 1993

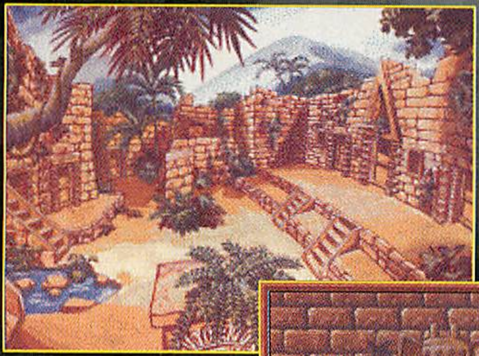
THE CRYSTAL MAZE



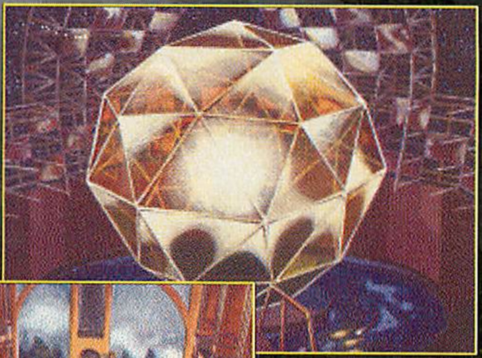
The fastest selling Acorn product Christmas 1993 Available now!

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Cluster Card news

THE Acorn World Show saw a number of hardware and software products both supporting and generating true colour graphics, and the forthcoming BETT show promises the availability of many more. Mentioned in last month's graphics page, the most exciting of these developments will be the latest addition to State Machine's graphics card line up.

The G335 Cluster Module (for the A5000) will be available with either 1Mb or 2Mb of special on board Video Ram. The G335 is the first graphics upgrade that will not require the computer's VIDC video controller chip to be used at all. The VIDC normally accesses the main memory by a process called Direct Memory Access (DMA) which involves the memory controller halting the Arm processor each time the VIDC obtains the video data from Ram, usually around 60 times each second.

State Machine, by making Risc OS send video data into the G335's own Video Ram, has eliminated the need for this performance sapping process.

In addition to completely freeing the Arm processor, which even the existing graphics upgrades can only do to a certain extent, the G335 bypasses the Risc OS screen memory buffer of 480K.

With the 2Mb upgrade, desktop modes such as 1600x1200 in 256 colours and 1152x896 in 32,768 colours will be possible. These workstation-like displays, running at near Mode 0 speed and not eating one byte of Ram, should revolutionise the A5000 and maximise the potential of larger monitors.

True colour applications such as *ArtWorks* and *Acorn Replay* will be fully supported and visible as they have never been before. Look out for the review of the Cluster Card and the G335 Cluster Module in next month's issue. State Machine is on (0582) 483377.

Wild eagles fly in

Wild Vision will be selling the finished and now readily available Eagle M2 multimedia card at BETT '94. The special introductory price of £299 will include *Eidos* compression software bundled in for free. Eagle M2 supports 512K video input as 24-bit, 15-bit, and 256 greyscale colour images.

Graphical features include hardware colour dithering, *Scanlight Plus* software for DTP purposes and hardware digital video scaling for clear moving images in windows down to postage stamp size.

The real time *Eidos* compression utility will be invaluable as a space and time saver, though there is an option for output to uncompressed *Replay* film for those needing to comply with Acorn standards.

In conjunction with the ColourCard Gold, supporting the new 32,687 colour desktop screen modes, the digitised video imagery is near photographic in quality.

You can contact Wild Vision on 091-519 1455.

New ProArtisan 2

A PHOTO CD version of *Pro Artisan 2* will be available from Clares by the time of the BETT show. A deal to bundle the CD-Rom with Cumana drives is on the cards, but on its own the latest version of this highly acclaimed painting package will cost the same £135 + VAT as the floppy disc version.

Upgrading to the CD-Rom is likely to be in the region of £20 for existing owners, giving you not only a plethora of high quality photographic images, but also the freedom to manipulate them to your heart's content, memory and disc space allowing.

You can contact Clares on (0606) 48511.



Evil art on disc

TO cater for all those with a liking to horror and the macabre, LynSoft has now finished compiling its Acorn-exclusive clip art series. Each disc or image volume, which contains 2.5Mb of compressed sprites, contains the work of one commissioned artist. The Macabre Art of Kerry Earl, The Fantasy Art of Russell Morgan and The Graphic Art of Roger Morgan are the three currently available.

The artwork is of the highest standard and has been converted from the original illustrations into a format usable by even the lowest end user.

The monochrome sprites are in Modes 15, 18 and 20. Lynsoft is on (0287) 624843.



Graphics issue

NEXT month's Acorn User will be the definitive graphics issue. For more of what will be covered and included, turn to page 133. One feature will be the cover disc, including some top quality clip art by the recent winner of the *ArtWorks* illustration competition, Walter Briggs.

Images on the themes of automobiles and aviation will be included as a sample of Walter's superb collections, designed under the name of Kingfisher Graphics. Kingfisher Graphics can be contacted on (0247) 888698

More morphing

Oak Solutions should have completed the latest version of its morphing application *Rephorm* (reviewed last month) by the time we go to press. Additions include display compatibility for 15-bit colour desktop screen modes and the ability to convert 24-bit Clear images into Acorn deep sprite files. The telephone number for Oak Solutions is (0954) 211760.

Contacting me

You can contact the Graphics Page by writing to me, Jack Kreindler, at The Graphics Page, Acorn User, Europress Enterprise, Europa House, Adlington Park, Macclesfield SK10 4NP.

Archiboard Online

ARCHIBOARD is the name of the latest bulletin board software package available for Acorn 32-bit machines. Started as a final project for the author's BSc in computer science, Keith Marlow's *Archiboard* has grown into a fully-fledged package that has occupied a fair amount of his free time since then. Judging by the fact that Keith is now a BSc Hons, it must have impressed the examiners as well.

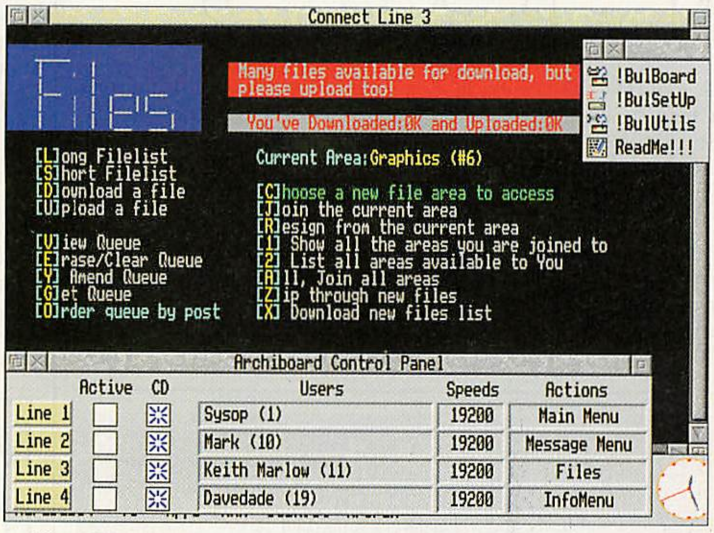
Archiboard is particularly suitable for educational users as it also offers network logons and so can be used as an e-mail and file server, either as a stand-alone BBS or connected into the existing network. Nine separate logon lines are supported as standard, and the system is fully Risc OS compliant, so it can be run in the desktop together with other tasks. *Archiboard* supports the latest serial device block drivers and will co-operate with the PD Arc-Binkley FidoNet mailer software.

A C-like script language is used for all functions, which can include customised features created by the sysop. These are compiled before execution, usefully showing up errors before run-time. The system can also be extended by the use of slot tasks which when called at the appropriate moment, automatically add functionality to the BBS. Most usage and statistic displays that are found on other systems are included as standard in the BBS software.

The default configuration as supplied is for 200 conferences, 150 directories (file bases), 2000 users and 10000 active messages, though all of these bounds can be easily increased. A demo version is available from the author that shows how easy the system is to set up and run. Of course, a lot of pre-configuration is done for you, and to really start a BBS from scratch with its own 'corporate' identity takes a great deal of time – and I do speak from experience!

The complete working basic version costs £45 and the networked version is £65. Included in those prices is all the software, full documentation, free upgrades from the support BBS, and access to the author.

The *Archiboard* demo disc is also available from the author, Keith Marlow, 21 Courtenay Close, Chapel Break, Bowthorpe, Norwich NR5 9LB, and is downloadable from some bulletin boards, including Archiboard Central, the support BBS run by the author in Norwich on (0603) 744231. A free demo of the network version will also be available at the BETT '94 show.



Archiboard in action

Caller ID starts this year

BRITISH Telecom is to introduce Calling Line Identity (CLI) to the UK starting in 1994 with Scotland, and then gradually to the rest of the country. Two new services will then become available. Caller Display allows subscribers to see the number of their caller before answering, and Call Return allows customers to find out the number of their last caller, and make a return call.

The technology for this, described in a recent British Telecommunications Engineering journal, requires the massive investment of a fully-digital exchange network that BT is rapidly bringing on line. In essence, the system uses very simple and familiar techniques.

When a call is received at the exchange of a customer with Caller Display, it requests the number of the caller from the originating exchange using the normal internal C7 signalling system already in use. After checks to verify that the Caller ID may be passed on, the caller's number, a text string and time stamp are sent in a burst of V23 modem tones – just like the tones used to access Prestel – which arrive at the subscriber's instrument just before the first ringing current is applied.

This differs to the US system where the caller ID is sent between rings, when it can be corrupted if the phone is answered too soon. The possibility of signalling before ringing opens up a number of possible applications that could use this technique, some of which could well smack of Big Brother. As usual, the helpful applications of technology come together with the hindrances of mankind...

In brief

Altered states

Steve Smith's Altered State BBS in Hemel Hempstead now has all-new access times, Fidonet node number and telephone number. Access is now 24 hours on a dedicated line, and the new geonetted Fido node number is 2:257/110. Altered State is now on (0442) 69455 at all speeds to V32bis.

To coincide with the recent increase in use of Keith Marlow's *Archiboard* BBS software by new sysops, Keith has opened his own support BBS in Norwich called Archiboard Central. Not surprisingly, the BBS runs *Archiboard* software on the author's own machine. Archiboard Central BBS is on (0603) 744231 from 6pm to 12am weekdays, all day weekends.

On the air

In the search for wider and more instant connectivity, wireless links between portable computers, peripherals and networks are being developed by many manufacturers. In this field, wireless really means 'without wires' because there are two parallel technologies involved, packet radio and infra-red.

Cellular Digital Packet Data is seen as the radio way forward by market players such as AT&T, while over 30 companies, including Apple, Microsoft and Sun, have formed the InfraRed Data Association (RDA) to specify a uniform wire-less interface.

The most promising of these for universal interconnectivity is called Baseband, which applies the data directly to the transducer without other modulation of the transmission medium. Minimum data rates of 115Kbaud are being considered.

World of Newton

The World of Cryton BBS in Somerset has a new file area for Apple Newton files and programs. Although the Newton features an infra-red communications interface, these programs require a PC or Mac to port them across a cable link to the Newton.

You can contact me by writing to: David Dade, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield, SK10 4NP or by e-mail to: DaviD@arcade.demon.co.uk, or by modem on Arcade BBS, User #2, 081-654 2212 or 081-655 4412.

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Surface mounted 16-bit SCSI technology
Software includes CDFS

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Drives are externally cased. Software includes CDFS

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Suitable for A300/A400 Series, A5000
NOT A3000, A3010/3020, A4000
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SCSI cards are 1/2 width Eurocard style
Software includes CDFS

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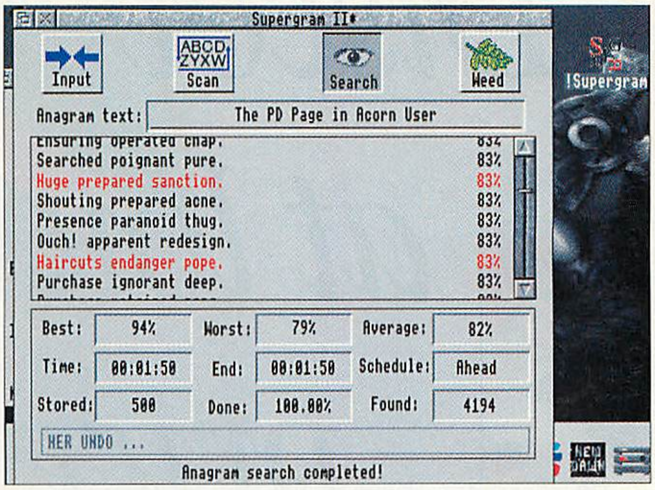
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Huprolog

ANDREW Stevens' implementation of Prolog is at the current time the only software Arc users can use to compile Prolog source code without resorting to the PC emulator and an expensive commercial compiler. So considering that it's freeware it's not a bad deal, although you're obviously not going to end up with the same quality of software.

Two versions of the compiler for 1Mb and 2Mb+ machines form the basis of the package and function in the form of a command line interface. A couple of example files with source code, and the odd small text file assist with the use of the *HUProlog* program, but for a beginner to the language it's still very tricky to get to grips with. *HUProlog* is a part of the standard Edinburgh syntax Prolog and although one or two functions are omitted, allowance has been made for this with the inclusion of template source code.

So to sum up, if you're an experienced Prologer and have been waiting for an implementation on this machine, check it out. If you're starting from basics the purchase of a good Prolog tutorial will also be necessary. You can get Prolog from the Datastream on disk UP-009.



Supergram II

WILLIAM Tunstall-Pedoe received rave reviews in the Acorn press for his last release *Supergram*, and has now gone on to produce release 2 (version 5.10E). This time the software is effectively classed as shareware, with users having ten tries or two weeks use of the evaluation copy before registering with a £12 fee (site licences available).

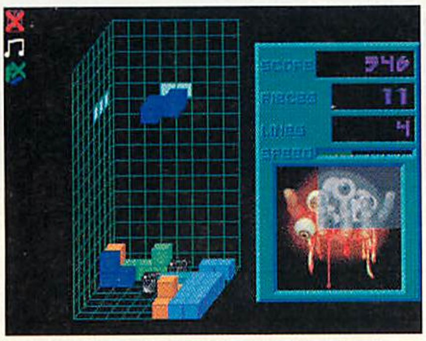
The idea of the software is to take a short sentence or sequence of words, and then produce an anagram, relevant to the original words. This is done quite effectively by using dictionaries of different categories of words, and then scoring each anagram made by the program to show how accurate the choice was.

The package is based around a single desktop window which is clearly laid out and makes good use of buttons. Searching is fast for a few words, but can take several minutes if you fill the input box with text.

Although I can't think of any serious uses for this software, anyone interested in English or word puzzles in general will find it fascinating. On the whole it's 'A gentle excel pack' (excellent package) and is 'suave tory eyes' (very easy to use). An evaluation copy of *Supergram II* is available from The Datafile on disk UT-44.

The third dimension

ALONG with magnifier programs the other category of code which seems to fill up PD libraries nowadays is Tetris. The best of these (by SICK) featured vector graphics to portray the next block, but the game itself was purely the traditional 2D style.



3D at last

3D Tetris from Dominic Beesley surpasses this by providing a real 3D cube to fill with the usual blocks that float down from the top of the screen.

An isometric view is used to display the main game area, and this does cause problems when blocks at the front of the cube conceal the ones at the back. Complete a single line of blocks in any direction and it will be removed and added to your score. Presentation isn't bad, and some effort has been made to use shadows to help with recognition of where all the pieces actually are in 3D space. Now all we need is Tetris rendered in full vector graphics with the observer spinning round the cube! *3D Tetris* can be obtained from the Datafile on disk GA-39.

Magnifier

OVER the last few years desktop magnifiers have been one of the most popular types of PD program but all the old favourites tended to be slow and more hassle than they were actually worth. Coding group, SICK, have spotted this and produced *Mangify*.

By using fast machine code screen access, a variable zoom of the area around the mouse pointer can be viewed quickly and simply. *Mangify* performs well even in hi-res modes and includes a tool box of controls to alter the window size and zoom factor. *Mangify* is particularly handy for use with template editors which don't include a zoom option.

In conclusion, *Mangify* is one of those PD utils you wonder how you got by without. *Mangify* is available on Datafile's disk UT99, and is Rhubarbware.

In brief

Updates

New versions of both the PD ray tracer *POVray* (v2.0) and *GNU C and C++* (v2.3B) are now available from HENSA at Lancaster University. Further information and full indexes are available by e-mail over the Internet.

PD library

This month we focus on David Holden's PD library, APDL. The Archimedes Public Domain Library was taken over by David last year, and has since grown rapidly with a wide range of PD and shareware programs in stock. Good deals on a small range of hard disks and commercial software can also be found. David is a PD coder himself and offers a fast and reliable service. Contact APDL at 39 Knighton Park Road, Sydenham, London SE26 5RN.

Scene news

German coder Joachim Schneider reveals that his 1994 demo competition is hotting up. Not only has the prize money risen to 1000DM (£380) but several groups have already pledged entries. XYMOX projects, BASS, Bytepool Produxions and SquoQuo all want in on the action and I know my own group, Quantum, will certainly be making an entry. The closing date for entries is the 1st February and Joachim is still open to contributions to the prizes on offer. Several software prizes have already been donated, so if any software houses are interested please contact me.

Contacting me

I'm interested in featuring as many new PD and shareware programs on this page as possible, and although I'm in contact with many software authors and PD libraries, there's still a lot more of you out there. So if you want a mention for your PD library in the special feature, or you just want to get your software reviewed, write to me Paul Wheatley at the new *Acorn User* address. *Europress Enterprise, Europa House, Adlington Park, Macclesfield SK10 4NP.*



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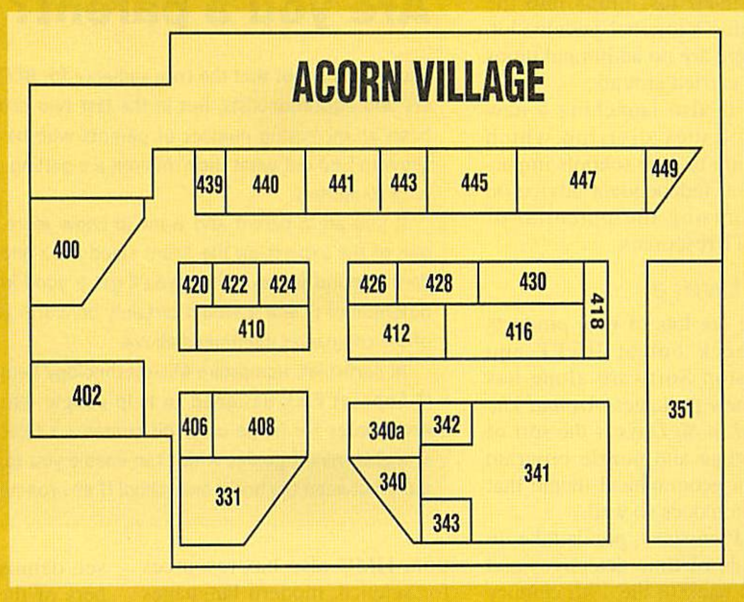
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430 - Acorn User
456 - Aleph One
416 - APA Multimedia
355 - AVP
410 - Clares Micro Supplies
351 - Computer Concepts
441 - Digital Services
449 - Electronic Font Foundry
408 - ESM
420 - Explan
447 - Hampshire Microtechnology Centre
331 - HCCS
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428 - Minerva Software
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406 - Topologika



A fair BETT

Alice Smith presents your essential guide to BETT '94

It hardly seems possible that it's that time of year again, but sure as New Year follows Christmas, the BETT Show takes place in January at London's Olympia.

The last 12 months do seem to have passed by remarkably quickly but to be fair to my slightly disorientated body clock, we did have snow in November and the event is very slightly earlier than usual, so make sure you've got the dates Wednesday 12th to Saturday 15th marked down in your 1994 diary.

Another reminder of the ageing process is that the BETT Show itself is 10 years old and, to commemorate this, Professor Stephen Heppell and his colleagues at Anglia Polytechnic University's Ultralab have put together an exhibition celebrating 10 years of educational computing. This will be based around a timeline with three strands: hardware, software and government initiatives.

The timeline will also extend into the future, with a display of some of the most up-to-date pieces of hardware on show at BETT, and predictions about what the next 10 years will hold for IT in schools.

One of the men who might have some idea, at least as far as the government's attitude towards educational computing is concerned, is Sir Ron Dearing, chair of the School Curriculum and Assessment Authority. He will be making a guest appearance at the exhibition on Wednesday January 12 at 12 noon, to coincide with the publication of his final report on the future of the National Curriculum.

Acorn at the show

This is a perfect and timely opportunity for teachers to discuss the issues surrounding the report and to air their views. Places will be allocated on a first come, first served basis, so turn up early and make sure you get a front row seat.

With a happening as big as BETT, it's hard to know where to start, but since this is *Acorn User*, the Acorn stand is as good a place as any.

Here visitors can sit in on free 30-minute theatre presentations covering a broad selection of curriculum and technology topics and see a range of interactive and rolling demonstrations illustrating some of Acorn's current solutions for IT in primary and secondary education.

There will be particular emphasis on the four key areas currently being targetted by government initiatives – maths, geography, science and design and technology – and to support these subjects, Acorn will be publishing a series of curriculum booklets containing case studies which illustrate examples of IT in practice in secondary schools across the UK. Kodak's Photo CD technology will be demonstrated and other releases include the Horizon Project CD-Rom, which collects together multimedia work produced by schools in Hampshire, and *PIMS*, an information management system for primary schools developed by Acorn and Longman Logotron.

New peer-to-peer networking technology for the Archimedes range will also be launched to the education sector at BETT 94. Based on Ethernet, it allows Risc OS 3.1 machines with at least 2Mb memory to share information and distributed resources.

Network buffs should also call in at the SJ Research stand to sneak a look at a pre-production version of the company's A4 networking card. This allows A4 portables to share in

site-wide resources and the card itself just plugs into the machine's internal podule slot, so there are no additional items to be carried around.

SJ is also launching a new consultancy division which will aim to give schools impartial and independent advice on maximising the potential of their IT resources.

Software

There are lots of new products to check out at BETT and Sherston Software alone has four new packages. *Around The World In 80 Days* is the sort of challenge and puzzle program with a geographical theme that Sherston does so well.

In *Victorians*, pupils take on the role of time detectives and travel back to the 19th century for an exciting adventure, and *Bodywise* is an interactive, animated database of the human body which children and adults should find captivating.

Sherston has also joined forces with Oxford University Press to produce the first talking books for a UK reading scheme and six stage 2 stories for the Oxford Reading Tree, read by Hannah Gordon, will be launched at BETT.

Hampshire Microtechnology Centre is another organisation with a long list of new products. This is headed up by *Exploring Nature*, a CD-Rom version of the Usborne First Book of Nature.

Longman Logotron will be having a busy show with the release of its *PIMS* primary school management system. There will also be complete systems available to provide administrative solutions, consisting of everything you need to create a management system, including maintenance. Two new products will also be launched: *FirstPage* is a DTP package aimed at primary schools, and *Advantage* is a new spreadsheet, aimed at those who want a spreadsheet but who do not need the sophistication of Longman's other spreadsheet, *Eureka*.

For special needs pupils, *In Touch* is a Concept Keyboard program which works to develop cognitive skills, while *Say It And See* is a piece of software designed to provide motivating exercises for children who need speech and language remediation. HMC also has resources for science, modern languages and control technology.

In the same curriculum area, Lego Dacta is 'pre-launching' (whatever that means) the Archimedes version of *Control Lab*, its complete solution to measurement and control at secondary level.

Another offering which aims to make control more accessible is *Complete Control* from Cambridgeshire Software House. This allows the user to manipulate *Draw* files and sprites, as well as the usual boxes and peripherals, on the computer screen.

CD-Roms

A number of the CD-Roms developed under the auspices of the DfE/NCET scheme were previewed at BETT '93 and will be formally launched at BETT '94, including *Micropedia* from ESM. This is based on the Kingfisher Children's Encyclopedia and contains 1300 text entries supported by pictures and extensive cross-references. The same company is also presenting two datahandling programs – *Ourselves* and *Transport* – under the Seelinks banner.

Anglia Television, too, has some new CD-Roms, including *Understanding The Body*, *Castles*, *Nineteenth Century Biographies* and two mapping discs called *Countries of the World* and *Counties of Britain*. More titles are to be announced at the show.

Again, Computer Concepts has around a dozen new products and visitors can expect to see demos of two new members of the *Impression* family: *Impression Style* and *Impression Publisher*.

Software offerings include *WordWorks*, a combined thesaurus and dictionary using data from Collins, *AudioWorks* which allows you to edit and process sampled files in a variety of formats, and a CD version of *ArtWorks*, plus loads of *ArtWorks* clipart on CD-Rom.

Making its debut on the CC stand will also be Canon's BJC-600 A4 colour printer and the company has cut prices on its LaserDirect range of printers and is finally making the long-awaited LaserDirect printer driver for Risc OS 3 available.

Other pieces of software to keep an eye open for are: *Jurassic Parts* from Resource; an Arc version of the successful Nimbus database *Clipboard* from Black Cat; *BearWorks*, an integrated word processor, database and spreadsheet for young children from ERIC; a collection of Welsh and Celtic fonts and clipart from Meu Cymru; plus three new Viewbooks from Information Education covering English grammar, French for finance and business and geography.

Hardware

In terms of hardware, Cumana focuses the spotlight on its new low-cost, double speed, Photo CD-capable Arc CD-Rom drive. This is complemented by a couple of discs: the *SEMERC Special CD-Rom*, aimed at special needs users, and the *Granny's Garden* CD-Rom, based on the classic 4Mation educational game (see page 97).

If you weren't at the Acorn World show, you won't have seen an Irlam Instruments demonstration of Replay Plus. This significantly improves the image quality of movies captured by the Acorn Replay DIY Kit and to accompany this there is new software which offers new movie formats, time-lapse recording and sound sampling facilities. Irlam also has Soundcard, a 16-bit stereo sound sampler which records straight to disc.

As well as organising the Special Needs Village, those busy people at SEMERC have found a few minutes to develop the SEMERC Mouser, a handy device which allows users to disable any combination of the three buttons found on the Archimedes mouse, thus simplifying software usage.

They are also showing the SEMERC Roller, a trackerball for those with poor motor control, and promoting the SEMERC E-x-t-e-n-d Trolley, a versatile computer workstation with an extendable desktop area, particularly useful for three-box machines such as the A4000S.

Exploring BETT

Many of the stands featuring Acorn hardware or software are clustered together in the Acorn Village (see the panel for a full list) but Acorn is everywhere, so look out for the green 'nut' symbols which indicate that relevant products are on display.

BETT is one of those events which people come back to time after time, but whether this is your first visit or you've been a regular attendee for 10 years at the end of the day, you'll hopefully get back on that shuttle train to Earls Court impressed by what you've seen and proud of how far IT in education has come in the past decade. All in all, it promises to be a great show.

For free tickets to BETT, call 081-984 7711. See last month's *Acorn User* for full details of the extensive four-day seminar programme, and please note that under-18s are not admitted to the show.

Are you a parent?

There is no doubt that the core audience for BETT is made up of teachers and educationalists, but in the last two or three years there has been an increasing number of parents who have come along to the show to find out what their children are getting up to in the classroom with computers.

If you are a parent and want to know more, do pop in and collar one of the experts on the Acorn stand for a one-to-one chat. By wandering round the exhibition you'll get a good idea of the educational potential of IT and it would certainly be worth your while visiting any of the companies mentioned above.

In particular, Hampshire Microtechnology Centre produces a Parents IT Support Pack designed to help people who have purchased an Archimedes for home use. This contains a selection of software and straightforward guides which can enable you to give your child continuity between the home and school IT environments.

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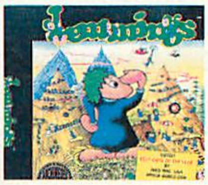


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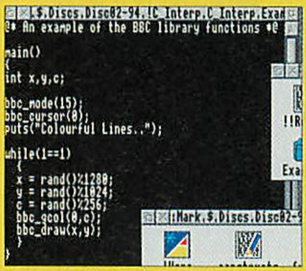
C Interpreter

By Nigel Brown and Bob Voisey

Want to learn how to program in C but can't justify £50 for a commercial compiler? Look no further, as on our cover disc for this month is The Serial Port's C Interpreter for the Archimedes, enabling you to write your own C programs and learn the language, absolutely free.

Interpret implements a subset of the C programming language, but in an interpreted context rather than the more usual compiled format. This means that C programs are run like Basic programs, where each line is taken and executed, rather than having to compile a program first as is more conventional.

Most C functionality is present in the interpreter, with the notable exceptions of structures and floating point types (long, double and so on). However, these features should be added in later versions of the software.



An example C program

Load up *Interpret* by double-clicking on it in the usual way: it will open up a window into which you should ype the name of he source file.

To begin the interpretation of a C program, drag the source to the interpreter icon on the icon bar.

Note that at the moment there is no support for multiple file sources or the #include directive, and only one source file can be interpreted at a time. The interpreter has a large number of utility functions built-in, covering most of the following standard and Risc OS libraries: stdio, stdlib, string, time, bbc, sprite and os.

Full documentation is included on the disc, along with examples of C programs which you can run on the interpreter. Please note that this version of *Interpret* is supplied subject to the conditions of the *Acorn User* cover disc, so three months after publication the application becomes Public Domain.

The Serial Port regrets that it cannot provide support for this application, although bugs can be reported via e-mail to Bob Voisey, user #9 on The World of Cryton BBS, or to bob@cryton.demon.co.uk.



Nigel Gatherer's Clip Art Column: Transport

By Nigel Gatherer

Trans-Atlantic liners, buses, planes, train and automobiles: they're all in this instalment of Clip Art from Nigel Gatherer. Contained in one *Draw* file, there's everything you need on the subject of transport: even Noah's Ark.

Larger

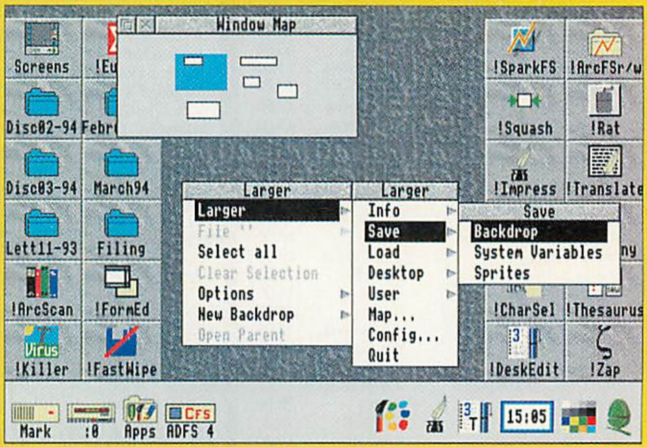
By Warm Silence Software

Larger (reviewed in *Acorn User*, September 1993) is a very comprehensive backdrop application, which not only provides a flexible backdrop facility, but also a virtual desktop, which effectively gives you an infinite desktop.

The demo is a complete working version of Larger which is time-bombed to work only between 10 January 1994 and 10 March 1994 (inclusive). Run the application to install the *Larger* backdrop (replacing the Pinboard). Now you can drop any files or applications onto the backdrop, where they will stay.

You can save the state of the backdrop using the *Larger* menu, and you can also save the system variables and Wimp sprites, effectively removing the need for lots of Filer_Boot commands in your boot file.

Larger also provides an infinite backdrop. If you hold down SHIFT and move the mouse over the edge of the desktop, the desktop scrolls in the opposite direction. In this way your screen is essentially a view onto the infinite desktop, and you can bring up a map window containing the positions of all open windows, whether on screen or not.



Expand your desktop horizons with larger

This demo version is time-bombed, so it will work until two months after publication (until 10 March). Until that time, it is fully functional and identical to the commercial product, which can be obtained from Warm Silence Software, St Catherines College, Manor Road, Oxford, OX1 3UJ.

COVER DISC

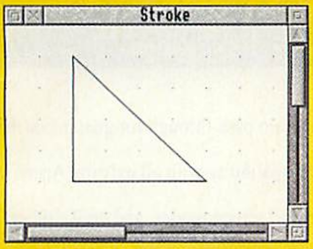
Artificial Intelligence



By Barry Wickett

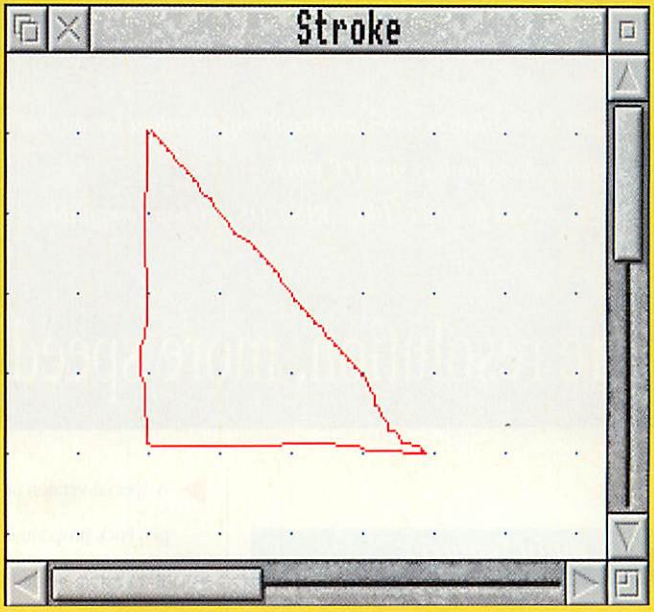
There are two programs on the disc to accompany Barry Wickett's article on Artificial Intelligence. The first is *Therapy*, which simulates a therapist. Simply run the program and answer the questions how you like; it should save a fortune on therapy bills...

The second application is *Stroke*, which allows you to draw freehand lines in a window, and these are then converted into straight line segments for output to *Draw*.



Run *Stroke* to install it on the icon bar, and click on its icon to open an empty window, where you create all of the input. The mouse acts as your pencil and the window is your piece of paper. You can draw lines by holding down Select and moving the pointer. The computer will straighten out any wiggles and draw in a straight line version. If you or the computer makes a small mistake then click Adjust to delete the last line created.

For more information on the settings used within *Stroke* and how to set it up for optimal results, see page 57.



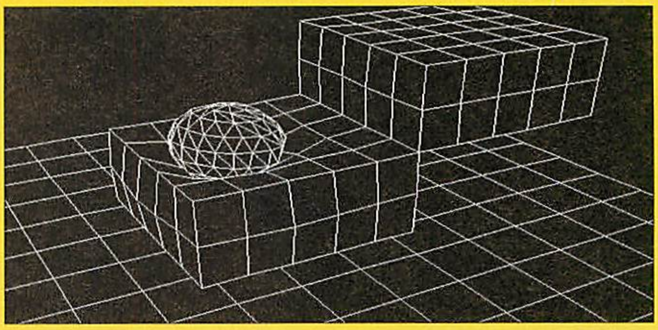
FEMS version 2.30



By Michael Attenbrough

The latest version of the Finite Element Materials Simulator contains a number of enhancements, including improved sphere definitions, better damping and a new 'frozen jelly' effect: have a look at page 93 for an explanation.

The disc also contains far more example scripts than last month, a number of which take advantage of the new features and all of which produce stunning animations of a world you can create yourself.



National Curriculum files



By Geoff Preston

The second part of our Guide to the National Curriculum covers modern languages and geography, and to accompany the article are a number of files to help implement IT in the classroom. There are *smArt* files, *Impression* documents, *Masterfile III* databases, as well as CSV files and *Advance* files to cover all eventualities.

Basic



Under the spotlight this month are procedures, possibly the most important Basic construct around. Details on page 105.

*INFO



Wavey demos, fractals (of course!), pottery, coral, one-liners, Wimp patches and more. It's all here, on page 119.

Disc problems?

Cover discs are thoroughly tested at each stage of production, but with such a large batch it is possible that one or two faulty discs may slip through. If you should receive a faulty disc it will be replaced free of charge. Send it with your name and address to:

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Speaking in tongues

Programming languages come in all types, and choosing the right one is essential. Robin Watts, Bryan Scattergood, Andrew McMurry and Matt Segall sift through the options

Why are there so many different programming languages available for your computer? The answer is that each language has its own special features that make it more suitable for certain uses than others. Each one has a 'home' in a certain field of computer programming.

So, how do you choose a language to program in? The answer is to choose one that suits both the type of programming you want to do and the way you like to program.

If you are just starting, a simple language such as Pascal or Basic is probably a good idea, and more experienced programmers will probably know their favourite language. When choosing a language, it is a good idea to try it out first, and luckily public domain or inexpensive versions of the language are often available that, while not as well supported as the more expensive versions, are very good for getting a feel for the language.

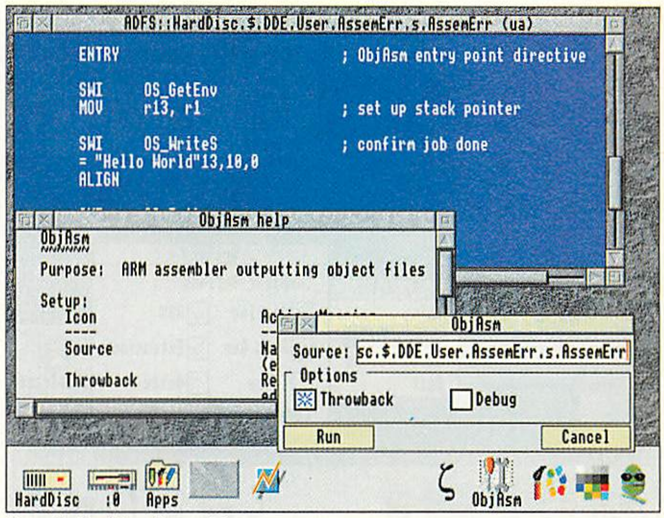
Basic

The version of Basic supplied with the Arc has come a long way since its origins in 1947. Basic I and Basic II were included with the early BBC micros, Basic IV appeared with the Master, and the Arc has Basic V and Basic VI, the latter having more mathematical accuracy.

As Basic is included in Rom it tends to be the language that most new programmers on the Archimedes try first. The fact that many users stick with Basic, and never move on to 'more powerful' compiled languages is a testament both to its power, and to how much the language has been improved from its original version.

Many of Basic's critics oppose its use on the grounds that it teaches bad programming habits, but BBC Basic has always been renowned for its structure. As the language has been updated this has been further improved, with the addition of powerful constructs such as multi-line IFs and CASEs. If anything, well written Basic programs can be clearer and easier to read than C ones.

One major difference between Basic and most of the other languages mentioned here is that it is an 'interpreted' language. This means that each instruction is converted into a form the machine can actually execute as the program runs. Compiled languages (such as C or Pascal) convert, or 'compile' the program's instructions just once and save this compiled version, which can then run faster than interpreted programs.



Acorn's Desktop Assembler

The final attractive thing about Basic is its in-built assembler (See Assembler). This enables Arm code programs to be assembled from within Basic programs, and allows powerful hybrid programs to be built up.

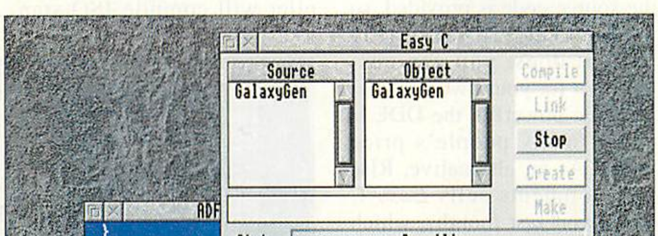
Assembler

However good the performance of other programming languages, to really squeeze the maxiumum performance from your machine it is necessary to resort to talking to it in its own language, machine code.

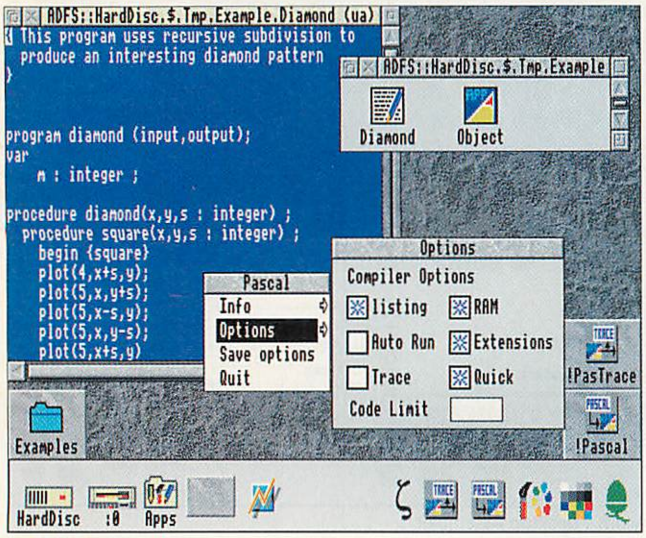
Most people have extreme trouble remembering long sequences of zeros and ones, so to solve this there is a 'shorthand' form of this code, called assembly language.

In this language every instruction corresponds to exactly one machine code instruction, but is much more readable – for humans at least. Before assembly language programs can be run they must be assembled by an 'assembler'. There is an assembler built into Basic on the Arc, so it need not cost you anything to get started.

Given that assembly programs are generally faster than those in other languages, and that there is an assembler built in to the Arc, why should you



Easy C from Risc Developments



Cambridge Pascal

ever want to program in any other language?

Well, firstly, assembly code is designed to be easy for the computer to execute, not for you to program with, and secondly, error handling in assembly code is certainly not user-friendly.

While the Basic assembler is very powerful, it falls down when assembly has to be interfaced with different languages. Since Acorn's recommended development language is C and it is common to rewrite critical or low-level sections in assembler, Acorn supplies a desktop assembler to complement their desktop C package.

This is a powerful, if idiosyncratic, macro assembler capable of generating files which can be linked into programs written in other Acorn languages such as C and Pascal, something that is impossible using the Basic assembler.

C

C is one of the most commonly used programming languages. It is a compiled language, and compilers are available for most computer systems so, provided standard routines are used, programs will be easily portable to other systems.

Unlike Basic, which has lots of instructions, the core of C is small, and is supplemented by libraries of subroutines. A library of common routines is specified in the ANSI C standard, contained on the Arc in a module called *CLib* or *SharedCLibrary*. In Risc OS 3 this is held in Rom, but on Risc OS 2 machines it must be loaded from disc before any C programs are run.

Acorn recommends C for programming large desktop applications, and sells not only a compiler, but a complete desktop development environment (DDE). This includes release 4 of the ANSI compliant Norcroft compiler.

In order to make C portable, the standard provides only limited access to the features of any individual type of machine, and so relies heavily on special libraries for each make. Therefore Acorn provides a library, *RISC_OSLib*, designed for writing desktop applications.

Many people have found this hard to use, and therefore have produced their own alternative libraries. The most popular is the freely available *DeskLib*. Unlike *RISC_OSLib* the source code is provided, so not only can you see exactly what it does, you can customise it for your own needs.

While powerful, the DDE is out of many people's price range. As an alternative, Risc Developments sells *Easy C* (reviewed last month), which includes all the functionality you need with a C compiler, but with a much lower price tag. It has a nice front end, and is probably easier than DDE for beginners to use. *RISC_OSLib* is not supplied, but *DeskLib* is included to fill this gap.

Work is well under way on a version of the Free Software Foundation's GNU C compiler to work on Risc OS. This is available for free, but we can't recommend it yet, as the Risc OS version still has many bugs in it. A Risc OS front end called *ArmC++* is being developed and should be available on ICS Careware discs and from other public domain sources sometime next year.

The main advantage of GNU C is that it includes C++, which is an object-oriented extention to C (see page 49 for more on object-oriented programming). Acorn have been working on a C++ to C converter which is currently being tested by developers.

Pascal

Pascal was designed in the late 1960s as a simple language, suitable for teaching programming. As such it is widely used in schools and universities for teaching people to program.

The standard Pascal language, specified by ISO, is small, making it quick to learn. It is also a very structured language, encouraging good programming habits and the graduation from Basic to Pascal is an easy one.

Like C, Pascal is a compiled language and, as it is standardised, source code is easily portable between different types of machine. Also like C, Pascal utilises libraries of routines to use features particular to each make.

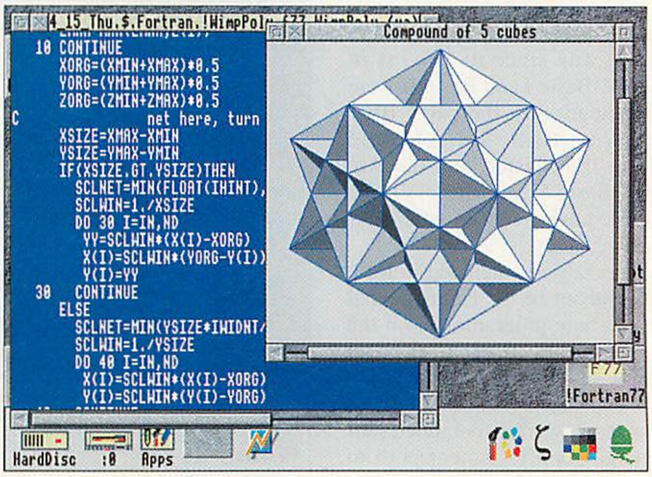
There are two main sources for Pascal compilers on the Arc. The first of these is Oak Solutions who produces *Cambridge Pascal*. This compiler will compile ISO standard Pascal, but it also includes extensions providing BBC Basic-like features, including graphics commands such as Draw, Move, and so on.

The compiler also comes with a number of libraries to allow many of the features of Risc OS to be used, and a simple debugging tool called *PasTrace*. In order to run an application created with this compiler a module called *CPCLib*, supplied with the package, must be loaded.

The second source of Pascal on the Arc is Acorn, who produces a product called *DDE Pascal*. This is free, but does require the DDE in order to be used. This is a very comprehensive package, using the *SharedCLibrary* and *RISC_OSLib*, which enables large desktop applications to be written in Pascal.

The compiler also supports many extensions to the ISO Pascal standard, but if these are used the code written cannot be easily ported to other types of machine. All of the utilities in the full DDE can be used in conjunction with this compiler, which aids in the construction of complex programs.

In the same family as Pascal are the languages Modula 2 and Oberon. These were designed as successors to Pascal, however they have not reached the same popularity as their predecessor. There are no plans to implement Oberon for the Arc, but rumours have been circulating recently about the possibility of a Modula 2 compiler appearing soon.



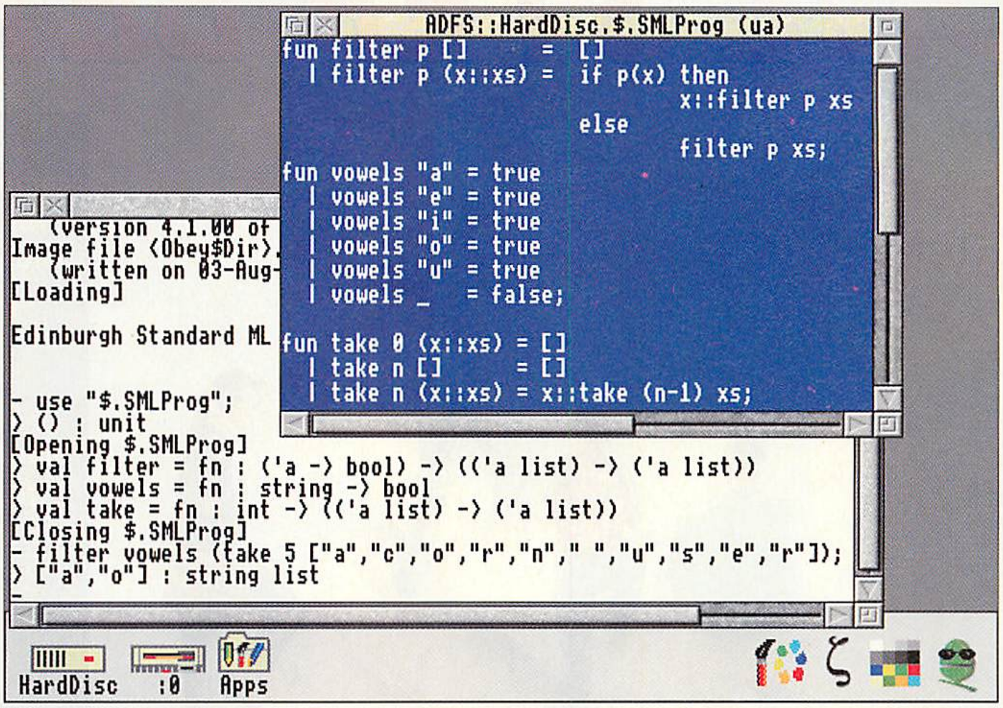
Fortran 77 from Intelligent Interfaces

Fortran

Fortran is the original programming language, which suffers from limited input format, dating from the days of punched cards. Fortran 90, the most recent of many revisions, will get round this feature, but Acorn users have to make do with Fortran 77.

Fortran is still the most commonly used language for doing scientific calculations, because many subroutines for doing standard calculations are available. Fortran compilers are usually very well optimised for producing code that is fast for doing numerical calculations. As such programs do not usually use machine specific features, they are very portable.

Acorn has discontinued its compiler, but a Fortran compiler is available from Intelligent Interfaces, with a desktop front end for £25 + VAT. The compiler supports the standard extentions to Fortran 77, like DO-WHILE and WHILE-ENDWHILE loops, as well as some specific to Risc OS, all of which are fully documented. Intelligent Interfaces can also supply a commercial library called GINO-F separately.



Functional languages include MC

Functional Languages

Most of the languages described here are classed as 'imperative' languages. These languages work by being given a series of instructions, and executing these one by one.

'Functional' languages work in a very different way; rather than telling the computer specifically how to solve a problem, you give it a set of rules or 'functions' that it can apply to break the problem down into successively smaller problems, which hopefully it can solve.

The earliest functional language is Lisp, which grew out of work at MIT in the early 1960s on manipulating equations symbolically. The language was taken up by the artificial intelligence community and is still in use; only Fortran has been in use for longer. XLisp, a portable version of Lisp with object-oriented extensions by David Betz, is available for the Arc from PD sources.

In 1975, following the design of Pascal and drawing on experience in teaching Lisp, workers at MIT redesigned Lisp to produce a more modern dialect called Scheme. XScheme is the successor to XLisp and is available from the same sources.

Also in the PD is a minimalist Scheme called SIOD (for Scheme In One Defun). EdScheme is a commercial version of Scheme ported to the Arc by Lambda Publications who support the product with a range of teaching materials and a newsletter.

Work in Edinburgh in the early 1980s led to the design of ML, a language combining the functional features of Lisp with more conventional constructs to yield an incredibly rich language. The only port available version for the Arc is a free port of the Edinburgh interpreter.

All of the above functional languages still allow assignment to variables. A trend in the mid 1980s was towards languages without assignment – pure functional languages. The most popular of these is Haskell, and an almost complete version of Haskell called Gofer is available in the public domain.

Other Languages

Here are some other languages on the Arc that we have only got space to mention.

First of these is Logo. This is mostly used as a first introduction to programming and is usually associated with a 'turtle', either an arrow on the screen, or sometimes an actual robot buggy. Logo can be used to program this to move around and draw.

There are a couple of implementations of Forth on the Arc. This language uses a strange type of notation called 'Reverse Polish'. This is one of those programming languages that you probably won't use unless you have a particular reason.

Finally, there is Prolog. This is a logical programming language, more like the functional languages covered in more detail above. It is used for programming artificial intelligence applications and Expert systems.

Product Information

Product	Supplier	Price	Tel
Cambridge Pascal	Oak Solutions	£99.95	(0954) 211760
Desktop Assembler	Acorn	£149	(0223) 254254
Desktop C	Acorn	£229	(0223) 254254
Easy C	RISC Developments	£49	(0727) 840303
Risc Forth	Silicon Vision	£85.06	081-861 2173
Logo	Longman Logotron	£69	(0223) 425558
Robo Logo	Silicon Vision	£42.51	081-861 2173
Lisp (Scheme)	Lambda Pubs	£45 inc	(0793) 695296
Prolog	Key Link	£69.95	(0926) 864128
Fortran	Intelligent Interfaces	£99	(0703) 261514

COLTON software

News from Colton Software — for all Acorn and PC computer users

In these pages you can read the latest news about Colton Software's exciting family of productivity software for Acorn RISC computers and also for PC compatible computers running Microsoft Windows.

Demonstration discs

Inside you'll find details of Colton Fireworkz, the integrated program, Wordz the word processor and Resultz the spreadsheet. We've included lots of information about each product, but for more details we can send you separate brochures on each product, plus, for the RISC OS versions, demonstration discs containing a working copy of the program (some features have been disabled) plus example files.

Meet us at BETT'94

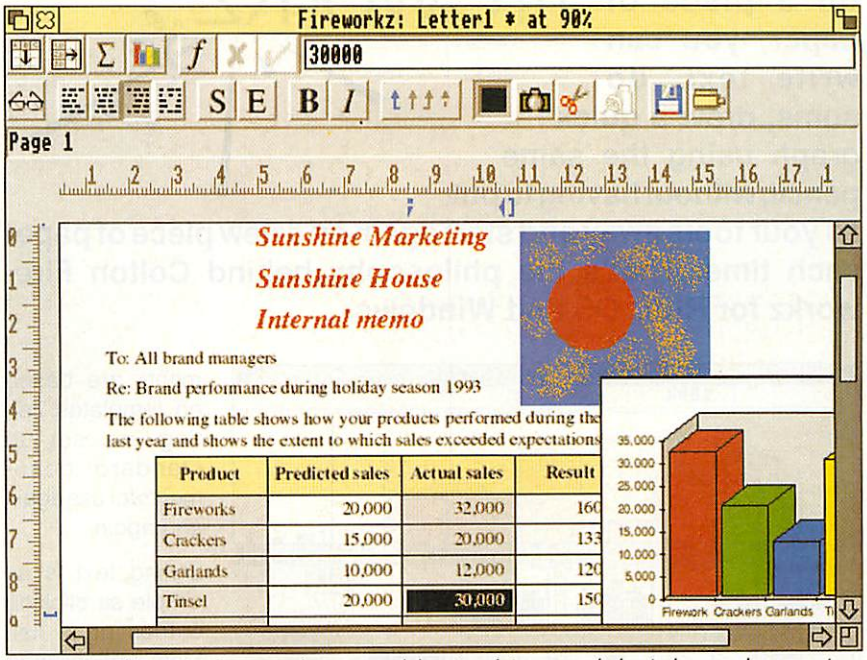
For further information, visit our stand number 412 at the BETT'94 show, Olympia, London, from January 12-16 1994. We will be demonstrating all our RISC OS programs and previewing our Windows programs.

If you miss us at BETT we will be attending other shows throughout the year.

How to contact us

For further information on any of our products, contact us by letter, phone, fax or electronic mail. In most cases we are able to supply products or information immediately:

Phone: 0223 311881
Fax: 0223 312010
Email: info@colton.co.uk
Mail: 2 Signet Court, Swann's Road, Cambridge CB5 8LA



Fireworkz offers word processing, spreadsheets, pictures and charts in one document

The Z family of programs

Fireworkz, Wordz and Resultz are part of the same family of programs, sharing user interface and other details to make it easier for you to learn and use them. All have a button bar, giving you access to most features in a single mouse-click, and you can swap files between the programs. Z family programs will be developed for both Acorn RISC OS computers and for PCs running Microsoft Windows.

Fireworkz *page ii*

See how Fireworkz, the integrated program, can provide you with a full spreadsheet and word processor, and allow you to use both in the same document, to create letters, forms, tables, reports, worksheets and charts.

Resultz *page iv*

Use this powerful spreadsheet for serious number-crunching. Transform your data into colourful charts. Link spreadsheets and use custom functions.

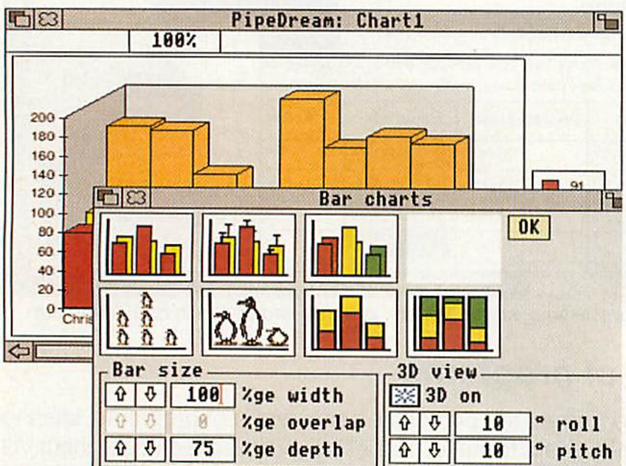
Wordz *page v*

This full-featured word processor is easy to use, guiding you through page design and paragraph formatting. Adding tables and pictures to documents is easy; tables can be edited live on the page.

PipeDream 4 *page vii*

PipeDream 4, for Acorn computers running RISC OS, is an old favourite and offers a proven environment for word processing, spreadsheet and data management, along with charting facilities and full support for RISC OS 3.

An integrated program which offers you more. When you work on a piece of paper, you can write text, do sums, draw a quick graph using the same pencil, without having to put all your tools away and start again on a new piece of paper each time. That's the philosophy behind Colton Fireworkz for RISC OS and Windows.



Editable charts can use images from Paint or Draw documents

More power

Colton Fireworkz contains the most powerful spreadsheet available for Acorn RISC OS computers.

Over 170 built-in functions help you organise and analyse your data. Custom functions and command language to let you program your own solutions.

The powerful charting system helps you create and customise bar, line, scatter and pie charts from text and data in worksheets or tables. Change the data and the chart updates automatically.

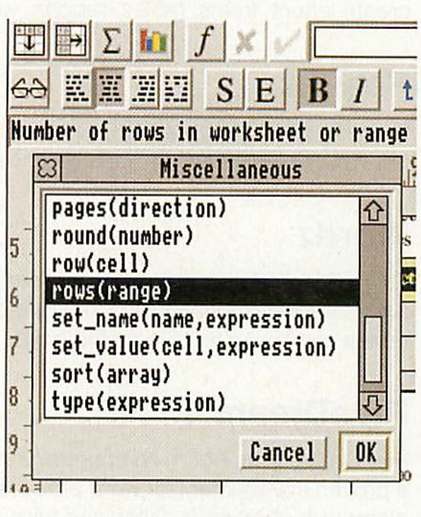
The spelling checker is complete with user dictionary, intelligent guessing, check as you type option and proper name facilities.

More productivity

Fireworkz abounds with features to help you improve your productivity. All documents are based on templates, letting you set up standard documents for use again and again.

Styling text is as simple as clicking entries on a list. Most options and commands are accessed by clicking buttons—bold and italic, centre and justify, save and print, are just some of the Fireworkz features only a click away.

The spreadsheet has Autosum and Fill commands to automate your work, totalling numbers and copying formulas without fuss.



The function selector and status line work together to help you choose

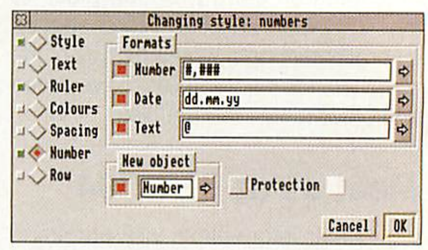
More help

Confused by the purpose of a function? Want to align your tabs precisely? Want to know which font you're using for headings? Fireworkz contains a status line which provides context-sensitive help and information on the work you're doing.

Colton Fireworkz for Windows also includes the usual Windows on-line help facilities. All versions of the program come with tutorial and example files to get you started in style.

More control

Fireworkz' WYSIWYG approach means that you're always in control over the look of your document. All documents are shown on screen as they will appear when printed out, helping you to design as you go along.



The style editor helps you with text and number formatting and layout

A powerful style editor gives you precise control over fonts, paragraph spacing, and colours used. You can use any RISC OS outline font, or TrueType and PostScript fonts with Windows.

More integration

You can use any feature of the program, whether you think of it as a chart, word processor or spreadsheet feature, in any document. All features are available for use in all documents, but still within 2MB memory.

Edit your table on the page by dragging columns and rows to the right size—or double-click to size columns automatically—and add colour to the cells or table grid using the style editor.

More compatibility

You can import files into Fireworkz simply by dragging their icons into a document, or onto the Fireworkz program

icon. A wide range of file types are supported, so whatever program you have been using you should be able to access your data.

Spreadsheet formats include PipeDream, comma separated values (CSV) and Lotus 1-2-3 (.WK1). Word processor formats include PipeDream, plain text (Edit), rich text format (RTF) and 1st Word Plus. Colton Fireworkz for Windows will support a wider range of file formats to enable it to handle PC originated graphics.

The Windows and RISC OS versions of Colton Fireworkz share an identical file format, so you can swap files between PCs and Acorn computers with no difficult conversion process.

More graphics

Add images and paintings in !Draw or sprite formats. Drag to position them on the page, resize them, or use them as the backdrop for your text or data. You can also use imported pictures as the basis for colourful pictogram charts.

More value for money

At only £149 (£175.08 including VAT) for a single-user copy of either the RISC OS or Windows version, Fireworkz is astounding value for money. If you buy a copy for RISC OS, you can buy the Windows version for only £75 (£88.13 including VAT), or vice versa.

Competitive prices for site licences for education and business are also available, as are upgrades from other products—see page viii for a full list.

Fireworkz: the future

We continue to improve and develop Fireworkz. As well as the Windows version, you can expect to see over the next year:

A full-featured, fully-integrated database module, Recordz, available as part of Fireworkz or separately.

Greater configurability, allowing you to make your own Fireworkz, adding and removing features to suit your own needs or classroom requirements.

Fireworkz £149 plus VAT

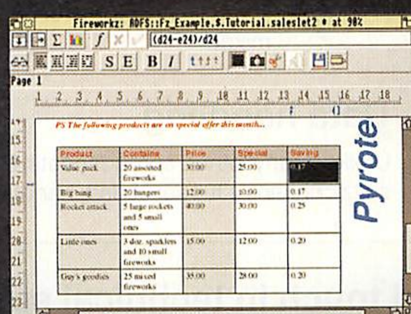
You'll find Fireworkz impressive in action. Here's how easy it is to create a complex document, including graphics and tables.



Click on your favourite document template from the list. This one has your company's name, address and logo already entered, saving you time in setting up the document.

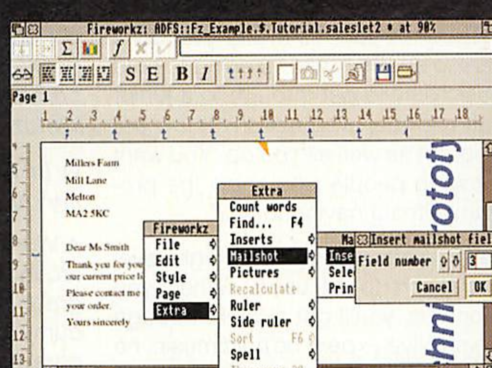
Enter your text. You decide to highlight some text mentioning special offers. The style editor leads you through designing a new text style, which is stored in the style list for later use.



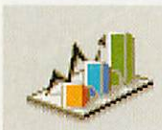


Adding a table is easy. You enter text and numbers—and the numbers are live. You're able to calaculate the value of your special offer live on screen in your document.

Formatting your table is even simpler. Select the cells and add a background colour to them. Next, load the document containing your customer list. Insert a few fields and your personalised mail shot is ready to print.

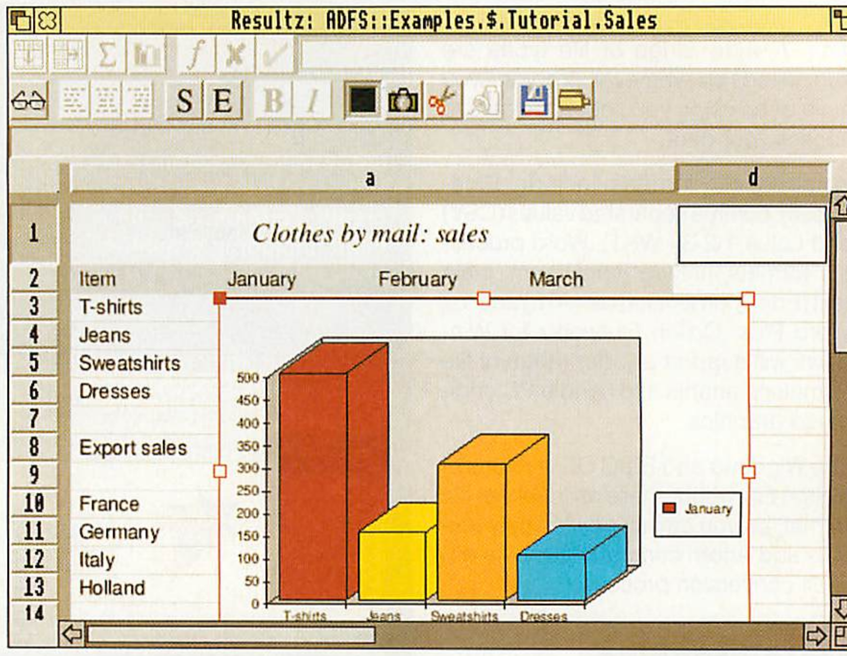


Resultz—the advanced spreadsheet



Resultz is a sophisticated spreadsheet that's surprisingly easy to use. Perhaps you've never thought of yourself as a spreadsheet user. But Resultz makes it so easy, whether you simply want to total a few numbers, or carry out complex calculations.

Don't forget that everything you can do with Resultz, you can also do with Fireworkz—and a great deal more.



Resultz is a powerful spreadsheet that's easy to learn and fast to use

Productivity first

Resutlz has been designed to save you time. To add a column of numbers, simply select the cells and a blank cell at the bottom, and click the Autosum button. The total will appear in the blank cell. When you enter a formula in one cell, click a Fill button to copy it to other columns or rows.

You can resize rows and columns to fit their contents just by double-clicking.

Advanced charting

Resultz offers the most flexible and easy to use charting you will find. Select a group of cells, click the chart button, choose the type of chart you want and it's drawn for you. Choose from formats including line, bar, pie, scatter and mixed.

Data handling

Unlike many other spreadsheets Resultz contains a full set of data handling functions. In fact, its database functionality is very similar to that of PipeDream 4. Sort your data via the dialogue box, or use a database functions to look through, find and match your records.

If you've been using another spreadsheet, Resultz can read CSV, .WK1 (Lotus) and PipeDream 4 files.

Custom functions

Real power users need the freedom to program and customise. Resultz has the most powerful custom language of any RISC OS spreadsheet.

Resultz £99 plus VAT

Delivering the personal touch in technical support and user help

If you've a query about how to get the best out of your software, you don't want to spend hours listening to hold music only to get through to a junior staff member who doesn't know the program as well as you do. You want to talk to people who know the program without having to wait.

Colton Software offers a high level of support to all users. When you phone us, you'll get straight through to a real live expert: no hold music, no complicated computerised phone system. We'll also take queries by letter, fax and email.

All comments and queries are fed into our customer database, to help us improve our programs. Here are some commonly asked questions about Wordz, Fireworkz and Resultz.

Q *In Wordz, the tops and bottoms of my characters get chopped off...*

A Wordz reserves space for grids drawn around tables. If you reduce the paragraph spacing to zero, the characters bump into the grid space. Increase the paragraph spacing via the style editor, or reduce the grid size to zero (in the paper dialogue box) and the text will display and print correctly.

Q *I can't find the spelling checker on the Fireworkz program disc...*

A Due to restrictions on disc space, the Fireworkz spelling checker has been put on the Examples disc. Follow the instructions in the Readmemore file and you'll be able to install the spelling checker.

Q *RISC OS graphics printing is so slow. Can I print in text mode?*

A Yes. Fireworkz, Resultz and Wordz all support character printing, using

Wordz is an all-round word processor with features no competitor comes close to. Its WYSIWYG approach makes it easy to see how your finished document will look when printed.

Wordz is an ideal upgrade from programs like 1st Word Plus: you can even import files directly and retain all their formatting.

The main aim in designing Wordz was to produce a program that was easy to use. Most of the facilities you'll need are accessed from the button bar, simply by clicking on a button.

Tables

Adding and editing tables live in your document is easy in Wordz. Just specify the number of rows and columns in the table and it's drawn for you. Type in entries, or load a CSV file to fill the cells. Resize rows and columns automatically, add background colours or fancy grids, and your table is finished.

Styles and fonts

Controlling type and fonts is a major part of a modern word processor, and Wordz' powerful style editor (also used by Fireworkz and Resultz) gives you precise control while placing your list of styles in easy reach from the style button and menu. Set up styles and save a template which you can use again and again. Use Effects to make one-off changes, and the Region editor to adjust or remove styles you have applied to your document.

Advanced features

Wordz is full of powerful features. Mail merge, using Fireworkz or CSV files, becomes an easy procedure. You can even generate and print mailing labels. A fast spelling checker, picture import and interactive ruler combine to help you produce good looking documents quickly and painlessly.

Wordz £79



Use the Region editor to fine tune your documents and to remove styles from text

PipeDream 4

PipeDream 4 is one of the most successful programs ever produced for Acorn computers. It provides an integrated working environment where you can use word processor, spreadsheet and database facilities within the same document.

PipeDream 4 introduced many new features, including pictogram charts and custom functions.

Teachers use it in the classroom with all age ranges to investigate data, produce charts and reports.

It's also used in schools for management, record keeping, marking, timetable management, and many other purposes.

Powerful program

Just like Fireworkz, PipeDream 4 includes powerful charting facilities, and a custom function and macro facility for creating complex spreadsheets.

All commands can be accessed from menus or using easily remembered keyboard short cuts.

special templates supplied on the Examples disc. You use the fixed pitch Corpus font on screen, in one size (although you can use bold, italic, underline, sub- and superscript effects). When you print your document, it will come out fast in text mode.

Q The Recalculate command in Resultz and Fireworkz doesn't seem to work.

A You need to select the area you want to recalculate, and then choose the command. Of course, this only applies if you've turned off background recalculation—normally Resultz and Fireworkz will recalculate your spreadsheet while you work and you won't even notice.

Q How do I switch off grid lines in a table?

A There are two ways to do this. Either remove the region which is applying them (use the region editor on the Style menu) or use the blank button in the Box dialog box. This button sets the grid style to blank, or off.

Q Can I chart series of data which are not next to each other, even if the data isn't next to the labels I want to use?

A Yes, by using Add to chart on the Chart menu. Make the initial chart with the labels and the data next to them (if any) selected. Then add the subsequent series data by selecting that and using Add from the Chart menu (which appears when you click the chart button)..

Q Can I print row and column borders on the paper?

A Yes. In the Paper dialogue box, set the row and column margins to a value at least wide or deep enough to contain their labels. The row and column headings will be placed on the page—you'll see them on screen and when you print out.

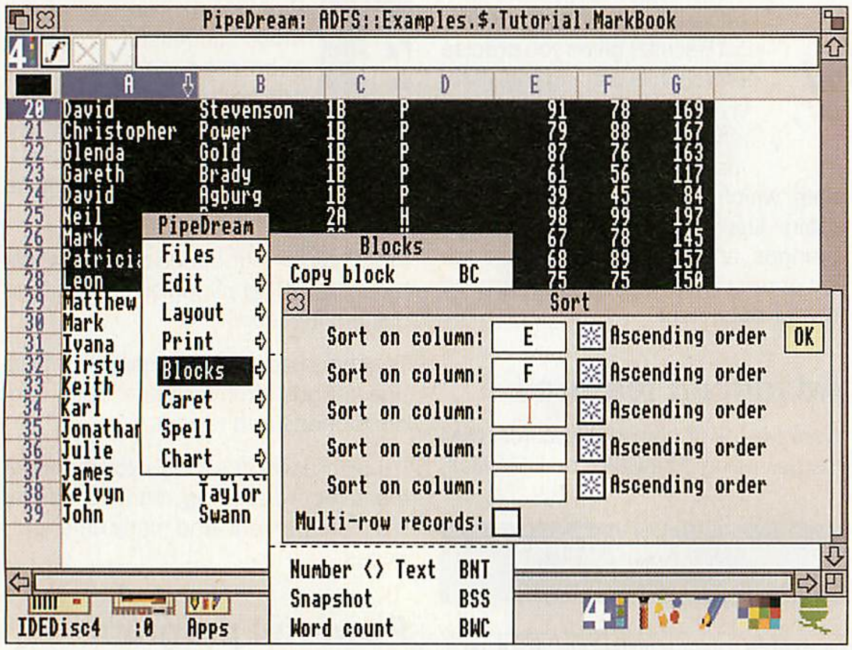
Q How do I get a new line within a paragraph, or within a table cell?

A Press Control-Return to begin a new line within the cell or paragraph.

New price

PipeDream 4 goes from strength to strength with our continued support. The only thing which has changed is the price.

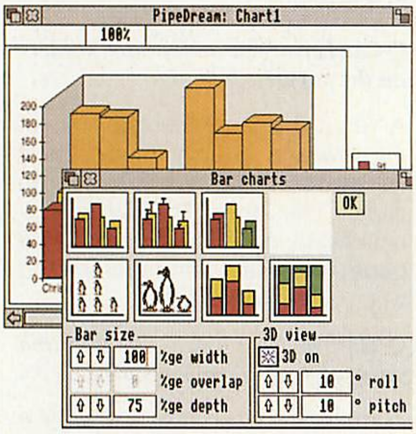
Single-user copies of PipeDream 4 are now £99 plus VAT (£116.33). If you later decide to upgrade to Fireworkz, you can do so at an advantageous price.



PipeDream 4 is a long-standing favourite in schools across the world

User group

PipeDream users can also join the highly successful user group PipeLine, which provides a quarterly disc of hints, tips and examples (there's also ZLine for Fireworkz users). Contact PipeLine at 29 Okus Grove, Upper Stratton, Swindon, Wilts SN2 6QA.



PipeDream features charts

Supporting education, integrating IT

Our products are used in many ways by our customers, but we recognise that customers in education have partiular requirements of the software. Our aim is to work in partnership with our education customers to enable them to get the best out of our Z family programs.

One way in which we help education is to develop and supply software that's easy to use and full of features to support classroom use. In Resultz, for example, it's easy to display and print the formula as well as its result.

However, there is even more which can be done to help, such as providing support materials, templates, files, and student work cards to support the use of our software across the curriculum.

Curriculum materials

Integrating IT into lessons is a major task for teachers. In partnership with schools and educationalists we're expanding our range of support materials to help teachers use our programs in the classroom, both to learn computing techniques and to use spreadsheets as a tool throughout the curriculum.

We're going much further than simple curriculum templates and documents. Our software will be alterable and configurable for use in different subjects and by different ages and attainment levels, so the teacher can show only those parts of the program relevant to students at that level.

We've joined forces with Bretton Woods Community School, Peterborough: toegether we are developing both card-based and computer-based curriculum material.

Over the next year you'll see the Z family gaining extra features and configurability tied in with the curriculum material, to make it easier for teachers to learn the software and then to teach it to others. Any feedback or comments you have on this project will be gratefully received.

Customising software

When you're using software in class you want students to concentrate on the task in hand, not on struggling with the software or being confused by program features they don't understand.

New versions of Fireworkz, due later this year, will allow you to control the functionality of the program, so that you can switch off parts of the program you don't want to use.

Upgrade your software

Our policy is to continue updating and improving our software. In some cases, that means the launch of major new versions of a program. In other cases, a few adjustments to take account of changes in operating system, or networking or other support software, may mean that we make small changes to a program. Colton Software's policy is to provide these small updates free of charge on request to registered users. Simply return your program disc to us with an SAE and we will send it back complete with the latest version.

If you own one of our products and want to upgrade to another, we'll charge you a fair price for the change—though you'll still get the full product. If you're a registered user of a competing product, you may be able to upgrade to Fireworkz, Wordz, Resultz or PipeDream for less than the full price.

Site licences

Software is a major investment for schools and educational institutions, and the need for multiple copies of a program adds to the burden. Colton Software operates a fair and generous site licence policy, which allows schools the freedom to use the software they have bought in the way they want combined with the reassurance that copyright law is not being breached.

Site licences are competitively priced at 10-user, 30-user and unlimited user level. We will also provide individual quotes for large scale licensing agreements at the local authority level.

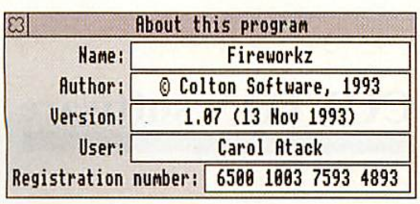
However, site licences are more than this. We aim to maintain a productive relationship with all our site licence holders, and provide many extras for them. Help in installing and managing our programs on your network, and supporting materials such as resource booklets, are often included.

See our support materials for education on stand 412 at BETT' 94

See page viii for a full list of upgrade offers in force the end of March 1994.

Have you got the latest version of your Colton Software program? Check the Info entry on the icon bar menu. If the number is lower than that shown below, send your program disc back with a stamped, addressed envelope for a free upgrade to the latest version.

PipeDream 3	**3.14**
PipeDream 4	**4.13**
Wordz	**1.07**
Resultz	**1.07**
Fireworkz	**1.07**



Taking a long-term View of software

Colton Software has a long history of producing high-quality productivity software for a range of computer platforms. Founder Mark Colton's experience writing the highly successful View family of programs for the BBC micro led him to believe that closer integration between the main programs would be helpful. Why not use one program which contained all the features needed, so that you never had to transfer data from spreadsheet to database or database to word processor? Both the data and the tools should be there and ready to use whatever type of work you wanted to do.

This philosophy resulted in PipeDream, first released for the BBC Micro as View Professional, and later in a revised version for the pioneering Z88 laptop computer. Other versions for PC compatible and Acorn Archimedes computers soon followed, and the program still has a huge following.

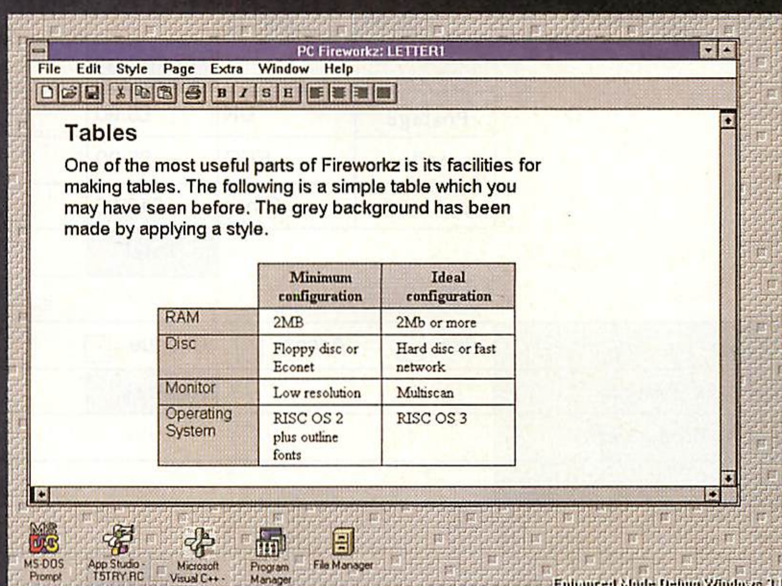
The latest version, PipeDream 4, is still a best-seller. It added charting facilities, and better support for fonts and other features of graphical user interfaces. However, PipeDream is a program with its roots firmly in the character-based world.

It was clear that a new program should be designed, taking the highly successful integration philosophy into the new era of graphical user interfaces: Microsoft Windows on the PC and RISC OS 3 on Acorn computers.

By using modern software development and design techniques Colton Software has produced powerful programs which answer the needs of the most demanding users. Ease of learning and of use, and the ability to run on a wide range of computers, were among the criteria for the new program.

Of course, some users know that they only want to perform a particular range of tasks, so the components of Fireworkz, word processor Wordz and spreadsheet Resultz, have been made available separately.

Looking into the future, the Z family will continue to be developed. 1994 will see the release of the Windows versions of Fireworkz, and also the release of the database component of Fireworkz, Recordz. Like Wordz and Resultz, this will be available either as a stand-alone program or as part of the Fireworkz integrated program.



Is this the way of the future? Soon you'll be able to run Colton Fireworkz on IBM compatible PCs with Microsoft Windows, swapping files with the RISC OS versions. The ideal solution for schools with a mixed computing environment.

Price list and order form

The following prices are valid until the end of March 1994. To order, send this form along with a cheque or your credit card details (name, address, card number and expiry date) to Colton Software at the address below.

Ordering upgrades

To order an upgrade, simply send us your program disc along with your order form. You'll receive a full copy of the program, including the new documentation and Examples disc.

Competitive upgrades

We are now offering competitive upgrade prices are now available for users of the following programs: 1st Word Plus, Acorn Advance, Eureka, Schema, EasiWriter, PenDown and Impression. To order a special upgrade, please enclose the key/program disc from the program you are upgrading from. You must surrender this disc to us in order to qualify for the discount.

Ordering site licences

Site licence prices are worked out as a multiple of single-user licences. 10-user licences are twice the price of single-user copies, and a 30-user licence is four times the single-user price.

To order a site licence you should send an official order on headed notepaper or purchase order. With your site licence you will receive a disc, documentation and a site licence agreement. You'll also receive support materials, such as our guide to using spreadsheets in the classroom.

Mugs

Our Colton Software mugs are just the thing to go with your software. Enjoy your coffee in style while you work with Fireworkz. Individual mug designs are available for each program. Buy mugs from us at shows, or by mail order for £3 including VAT, postage and packing.

Further information

If you'd like to receive further information about our programs, send us your name and address details and we'll add you to our mailing list.

Contact

Colton Software
2 Signet Court
Swann's Road
Cambridge
CB5 8LA

Or phone in your order: 0223 311881

Fax 0223 312010

Email info@colton.co.uk

COLTON software

	Price exc VAT	Price Inc VAT	Quantity	Amount
RISC OS Software				
Fireworkz	£149.00	£175.07		
Wordz	£79.00	£92.83		
Resultz	£99.00	£116.33		
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The write stuff

It's hard to be a good programmer without a good program editor. Alex Thoukydides and Dan Brown have a look at what's available

To write any but the simplest of programs, it is necessary to use some form of editor. With most languages the code is written as plain text files, for which almost any editor is suitable; to edit Basic, however, does need an editor which can load Basic programs.

Most users of Archimedes machines will be familiar with *Edit*, which comes free with the computer. Risc OS 3 *Edit* is perfectly adequate for programming (Risc OS 2 *Edit* can't load Basic programs easily) but it does have severe limitations, which has left the market open for third party developers to release their own editors.

DBEdit

Supplier: 4Mation
Tel: (0271) 25353
Price: £30.00 + VAT (includes site licence)

DBEdit is primarily designed for editing Basic programs. The author has clearly considered carefully what Basic programmers require from an editor, so *DBEdit* is crammed full of useful functions, only a few of which can be described here.

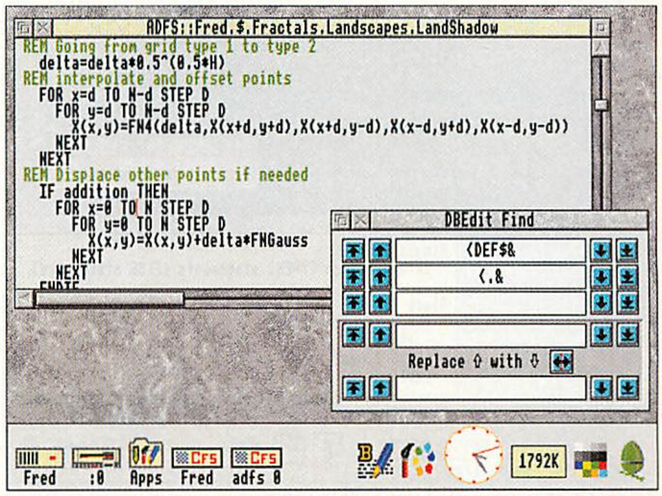
Basic programs are edited in tokenised form, which allows larger programs to be edited than if the whole program was converted to text.

One particularly useful feature is the ability to build indexes of the program being edited. Once an index has been created, it is possible to click on an entry in the index to move to that line in the program; the entries in the index can be listed either in the order in which they appear in the program, or sorted alphabetically.

It is frequent for columnar data to appear in programs, particularly in comments, or when using the Basic assembler. *DBEdit* has a feature, 'Elastic spaces', which helps to maintain columns of data when characters are.inserted or deleted, by treating double spaces like tabs. Another feature included is an automatic indenter which can format your program to make it far more readable. There is also a Basic cruncher which produces a version of the program which is smaller and faster at the expense of readability.

There are however, a number of annoying features in the program; for example only complete program lines may be selected for copying or deletion. Also, there is only partial support for line numbers; GOTOs and RESTOREs are only updated when the program is loaded or saved; and even saving a file immediately after loading it results in the program being renumbered.

The program has clearly been well thought out, and is supplied with a good manual which is clear, concise and well presented. *DBEdit* is less useful for editing programs in languages other than Basic, due to relatively limited search and replace facilities, and the lack of support for throwback or task windows.



DBEdit is good for basic programmers

DeskEdit 3

Supplier: RISC Developments
Tel: (0727) 840303
Price: £27.19 + VAT

DeskEdit 3 is supplied with a glossy manual, a function key strip, and a quick reference guide to the keyboard shortcuts provided. The manual is concise, bordering on terse, and assumes that it is being read from start to finish.

The editor is packed with features, including utilities like a programmer's calculator, text macros, support for throwback, and even help on Basic keywords. Regrettably, Risc OS interactive help is barely supported.

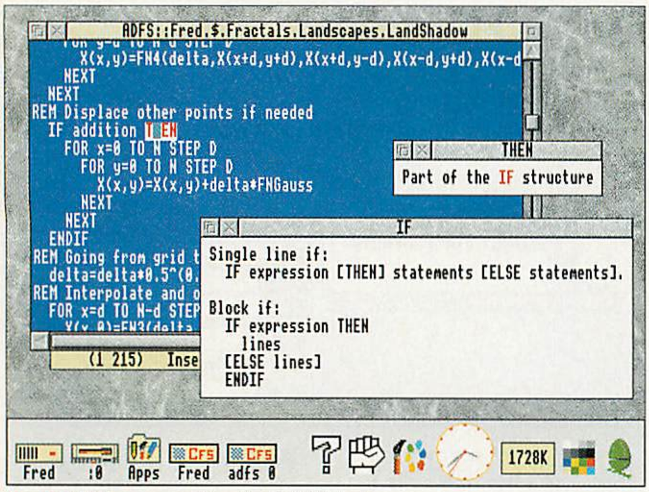
Editing of Basic programs is eased by support for line numbers, automatic listing of procedures and functions, and a highly flexible indenter which improves readability. Abbreviations are expanded as you type, and warnings are given concerning unmatched brackets.

Basic programs can be saved either in the normal tokenised form, or as text; however, all files are edited as text. An extended save facility is provided which preserves *DeskEdit* status information between edits, so that when the file is reloaded, windows are opened at the same position, with undo buffers intact, and so on.

C programmers benefit from a number of features, amongst which are a function lister, a syntax checker which automatically provides braces and



Desk Edit 3 with its programmer's calculator



StrongEd 3 has comprehensive built-in help

indenting, and the ability to use *SrcEdit* help files.

DeskEdit is written in C, which results in a memory requirement of about 400K and many of the same problems as *Edit*. These include slow window redraw, and a scroll-bar that changes size depending upon the number of characters on screen rather than the number of lines displayed.

The menu system is based on that employed by *Edit*, with extra options added below the original five, giving fifteen in all. This unfortunately produces an unwieldy menu which is counter-intuitive, and hence awkward to use.

DeskEdit is a powerful package let down by poor presentation. The features presented are useful, but are difficult to use, resulting in a slow learning curve.

StrongEd 3

Supplier : Stallion Software
Tel: (0225) 339090
Price: £30.20 inc VAT (StrongEd), £15.00 inc VAT (ASM_Help)

StrongEd arrives on a single disc with a clear and concise manual, that can be read from cover to cover, or just as reference.

Also supplied is *StrongHlp*, a remarkable help program which provides information on many aspects of programming, from the use of a Basic keyword, to the details of the Archimedes memory map, all at a click of the mouse.

Help on Arm assembly language can be found in *ASM_Help*, also from Stallion Software.

Highlighted entries in help windows may be clicked on, to produce further information. *StrongHlp* also emulates the Acorn *Help* application, a feature fully supported by *StrongEd*.

The editor itself combines the features of *Edit* with a highly flexible search and replace utility, support for throwback, and the speed that can only be achieved by pure Arm coding.

A useful feature is multi-line block editing, allowing changes in one line of a selected block of text to be applied to the others. This allows changes to be made, quickly and easily, to a group of similar lines. A status bar is also provided, attached to the bottom of the active text window.

Programming features include an index of procedures and functions, automatic bracket matching, and a keyboard short-cut that runs the program being edited. Help on the Basic command under the cursor is provided at the press of a function key.

Notable omissions include automatic indentation for program structures, automatic expansion of Basic abbreviations, and support for line numbers: GOTO users please note.

C programmers fare better; for example edited source files can be compiled at a single key-stroke. Again, useful features are missing like automatic indentation after an opening bracket. Surprisingly, no help is provided for the C mode.

Zap

Supplier: PD Libraries, such as APDL
Price: Freeware

Zap, by Dominic Symes, is different from the other editors in this review since it does not cost anything. In use, the most striking difference from *Edit* is the speed; screen redraw is extremely quick with either the system or anti-aliased fonts.

With *Zap* it is possible to do a lot more than simply edit text and Basic. Display may be as text, bytes, words, ASCII dump or disassembled Arm code. The file may also be edited in any of these modes, and it is possible to change mode at any time. Basic files can be edited either tokenised or detokenised in the style of either *ArmBE* or *Edit*.

It is relatively easy to add your own extension modes; all the necessary documentation is supplied. Currently a C mode by Bryan Scattergood is distributed with *Zap*, providing automatic indenting and configurable bracket matching.

The indenting facility is particularly useful, as it sensibly indents lines after open braces, and correctly lines up the closing brace.

When a file is loaded, the mode is chosen based on its filetype. However this means that, as most C source files are of type Text, C mode will not be selected automatically.

All of the keyboard shortcuts are user configurable, allowing a key to perform almost any sequence of operations. Included in the default setup is an EMACS style keymap.

The search and replace facilities in *Zap* are extremely powerful, but this can make them confusing for someone unfamiliar with them. There is an option to output matching strings to a buffer, where it is possible to double-click on any entry to jump to the relevant line in the file.

One very useful feature offered by *SrcEdit* and *StrongEd*, which *Zap* lacks, is the ability to offer help on the word under the cursor. This would remove the necessity to manually find the definition of a library function.

The sheer number of options can be confusing for new users. However, *Zap* is one of the most versatile and powerful editors available; surprising as it's free.

Other editors

There are a number of other editors around, such as *SrcEdit,* one of the tools included in Acorn's *Desktop Development Environment*, and *MicroEMACS* from David Pilling. However, these do look a little dated nowadays.

Conclusion

The choice of editor is mainly a matter of personal taste. For editing Basic programs, the clear winner out of the commercial packages is *DBEdit*. For other languages, any of the editors are suitable. *Zap* is definitely worth considering, especially as it is freeware; it is the only editor out of those reviewed that can display and edit files both as hexadecimal values or disassembled Arm code.



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Last week the Express reported on the complaints of

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"The cage in which aluminium cans are stored was

SCHOOL CHILDREN PROVE THAT NEW BYPASS WILL DAMAGE THE LOCAL ENVIRONMENT

EXCLUSIVE

BY MATTHEW DAVIES

USING an innovative new program on their classroom computer children from St. Chad's School have shown town planners that a proposed new bypass would have a detrimental effect on their local environment.

The children surveyed the local area and fed details into their Topographer program, which allows them to look at the relevant area in 3D. They then added the new road along its proposed route and it became obvious that the road would not only affect an area renowned for its badger population but would also distract children in the classroom as they would be able to see traffic moving along the new road.

The children even went as far as to propose a new route for the road to the town planners. The proposed route would have a negligible impact on the area but still provide the much needed relief to existing roads.



A SERIES of sweeping proposals which would abolish free parking in district shopping centres, change some bin collections, increase lettings charges and scale down mileage claims by some council officers, have been announced by Labour.

In the first indication of their intentions sir seizing power jointly with the Conservati party has produced a b 1,000 servi

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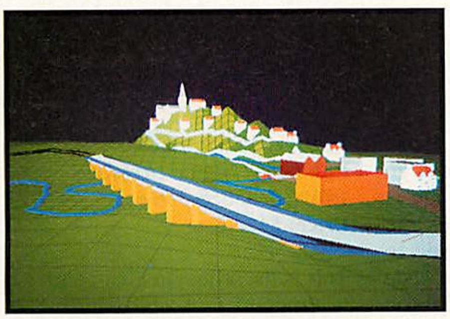
Other econ departmental b cutting scho fees.

Topographer is a major application for the Geography curriculum which allows children (and teachers) to have lots of fun whilst learning all about maps, contour lines, valleys, rivers etc. In fact *Topographer* covers virtually all items found on a map.

The real break through with *Topographer* is its 3D section which allows you to convert a 2D map into a 3D model on screen. Imagine turning a set of flat contour lines on a 2D map into a 3D model which clearly shows the hill — no more cardboard cut out models or papier mache! You define where you look from, and what you look at.



Topographer also covers aspects of the IT and maths curriculum with its modelling capabilities. Just stop for a minute and think of the projects that you could do with *Topographer*. You could make a map of the local area with churches, pubs, woods etc. and then view it from various places. If there is a bypass proposed you could add it in to the existing landscape and see where it is visible from and what impact it is likely to have on the community. I'm sure you can think of a hundred and one topics.



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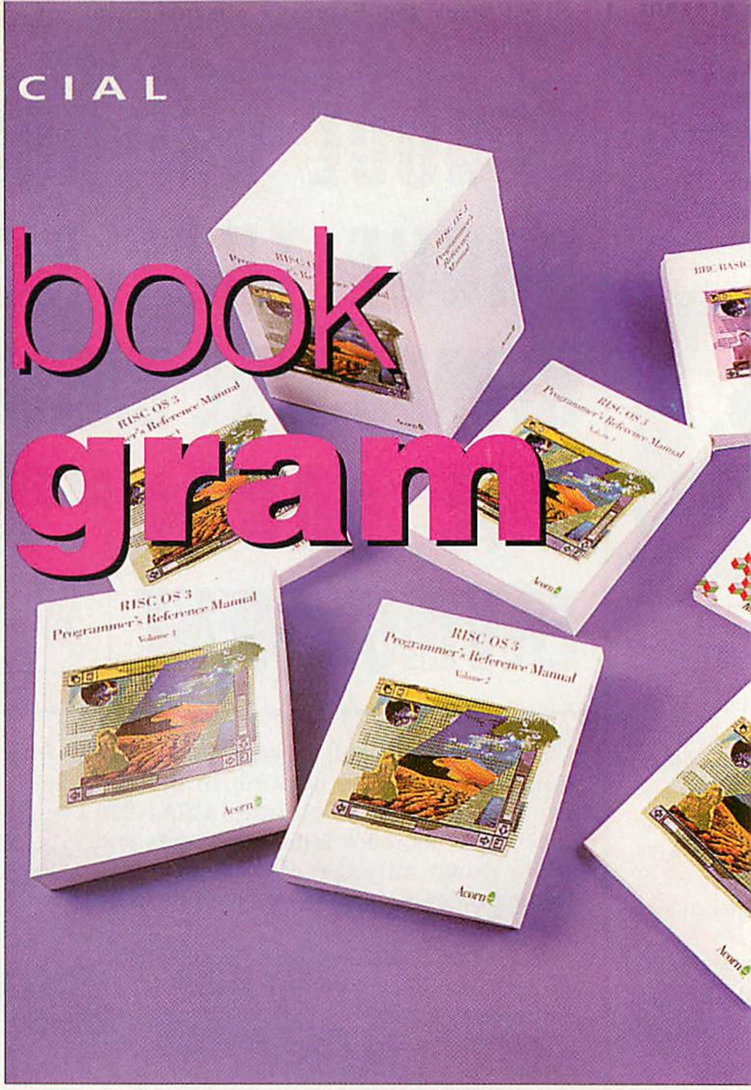
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The book program



Learning to program is a whole lot easier if you have the right manuals. Dominic Symes and Mark Vevers sift through the competition

First Steps in Programming Acorn Risc OS computers

Author: Martyn Fox
Publisher: Sigma press
ISBN: 1-85058-521-0
Price: £14.95

If you don't know how to program, but want to find out, then this is the book for you. It starts at a very simple level, assuming no prior knowledge, and introduces you to the language Basic which comes free with your Archimedes.

This is a comprehensive book, covering everything the novice programmer needs to know. There are lots of example programs and a glossary of all the Basic keywords with examples for each one.

A short game called *Munchie* (a simple Pac Man) is used to illustrate moving graphics on screen and how to generate simple sound effects.

The book ends with a taster for assembly language, should you wish to learn more.

Wimp Programming for All

Authors: Lee Calcraft and Alan Wrigley
Publisher: RISC Developments Ltd
ISBN: 1-85142-088-6
Price: £12.95

Having taken your first steps, you'll want to use your Basic skills to start writing multitasking desktop applications. This is the purpose of Wimp Programming for All.

The introductory chapter explains what the Wimp is, how it works, and how to communicate with it. Each of the following chapters concentrates upon a particular topic. For example, the second tells you how to create a window, and the third explains the meaning of the messages the Wimp can send to your program. The template editor *FormEd* is also described, to make creating windows easier.

Many example programs are given. They are all available, with an additional library of useful functions, on a disc priced £4.95 (+ £1 p&p) available from the publisher.

BBC Basic Reference Manual

Publisher: Acorn Computers Ltd
ISBN: 1-85250-103-0
Price: £19.95

This is the official Acorn manual for Basic versions V and VI; it used to come free with all Archimedes, but now has to be bought separately. However, it is an excellent introduction to programming in Basic and well worth the extra cost.

The book can be divided roughly into two sections. The first is a tutorial starting from first principles and slowly introducing all the commands with example programs as you go. The second is a reference section, listing all the keywords and functions available, with full documenatation and examples for each one.

Two improvements over the old Basic Guide are that keywords are sorted alphabetically and a new assembler appendix has been added.

There are several useful appendices giving VDU, PLOT codes and a short history of BBC Basic. Even if you are an experienced Basic programmer, this book is useful just for reference.

Archimedes Assembly Language (2nd edition)

Author: Mike Ginns
Publisher: Dabs Press
ISBN: 1-870336-20-8
Price: £14.95

When you've mastered Basic you'll want to make things go faster: Assembly language is the key. This book uses the assembler built into Basic to introduce you to machine code instructions, with lots of Basic programs as illustration. The alternative is to buy Acorn's *Desktop Assember* which comes with a manual, but this is much more expensive and aimed at the more experienced programmer.

Each Arm instruction is described in detail, with examples. Towards the end the book tells you how to replace most of the commonly used Basic keywords with their assembler equivalent, thus easing the transfer between the two languages.

There is a section on the Wimp, but it doesn't go into any depth and is of little use in practice. However, combined with the PRMs (see later) this is a very useful book. A disc containing the examples used is available from Dabs Press priced £9.95 (inc p&p).

A Beginner's guide to Wimp Programming

Author: Martyn Fox
Publisher: Sigma press
ISBN: 1-85058-366-6
Price: £12.95

This is the sequel to First Steps in Programming, and assumes a familiarity with Basic. It starts you off by creating a little application called *Test*, which at first just sits on the iconbar. As the features of the Wimp are introduced, they are added into *Test* so you can see how they work. In the end you are left with a library of functions that you can use in your own programs.

This book seems slightly clearer than Wimp Programming for All, particularly



in the tricky business of data transfer and creating your own save box. Again, the template editor *FormEd* is covered.

A disc containing the example programs is available from the author priced £3.95 (inc p&p).

Basic Wimp Programming on the Acorn

Author: Alan Senior
Publisher: Dabs Press
ISBN: 1-870336-53-4
Price: £14.95

As with the last book, this is aimed at people who already have a good knowledge of Basic and wish to make a start at programming the Wimp.

It is divided into three main sections, the first being a detailed discussion of the programming techniques that will be required. The second is a series of small excerpts of code followed by an explanation, and the third consists of the appendices, detailing the library and the operating system calls.

Although the explanations were generally clear, I feel that they were sometimes a little too jargon laden for a novice Wimp programmer. On the plus side, the book is provided with a disc with all the examples and a library of the routines used; these provide a good basis for experimentation – the key to successful Wimp programming.

The Programmer's Reference Manuals

Publisher: Acorn Computers Ltd
ISBN: 1-85250-110-3
Price: £99

The PRMs are the definitive manuals for programming the Risc OS operating system. This four volume tome, with separate index and Style Guide, is essential for every serious programmer.

The main manual describes the interface that is presented to the programmer by the operating system, whereas the Style Guide is a short book on the suggested 'look & feel' of any Wimp application that you write. The aim of this guide is to ensure that a consistent and helpful user interface is presented to the user, and it details everything from the expected operation of the mouse, to the wording of error messages.

There are clear examples of good and bad practice throughout the Style Guide, and a reasonable number of diagrams showing how your application should appear. Even though as a novice programmer it may seem a little overwhelming, it is well worth reading this before you start programming.

C - A Dabhand Guide (3rd edition)

Author: Mark Burgess
Publisher: Dabs Press
ISBN: 1-870336-16-X
Price: £16.95

This book presents a fairly leisurely introduction to the C language with questions at the end of each section (with answers in the back). A disc containing all the examples used in the book is also available from Dabs Press (£9.95).

It must be noted, however, that the C taught by this book does not conform to the ANSI C standard: unfortunately the Acorn C compiler does and the 'pcc' option will have to be set before the examples will compile without errors.

Disappointingly, the Archimedes section at the back of the book was written to run under Arthur, the operating system for the Archimedes before Risc OS 2, and consequently the graphics example given will fail to work entirely – a pretty poor show when you consider that the new edition was published after Risc OS 3 appeared.

Programming in ANSI Standard C

Author: Gordon Horsington
Publisher: Sigma Press
ISBN: 1-85058-257-2
Price: £14.95

This is aimed at those people who already have a little knowledge of programming in Basic, with frequent comparisons between the two languages.

The book stresses the importance of a good programming style throughout, to the extent that the introduction suggests the idea of 'think first, program later' several times.

With many examples, good explanations and a logical progression through the language, it should leave the reader with a solid understanding of even the most complex aspects of C. All this makes it an ideal book for someone wishing to learn C on the Archimedes.

The C Programming Language (2nd edition)

Authors: Brian W Kernighan & Dennis M Ritchie
Publisher: Prentice Hall
ISBN: 0-13-110362-8
Price: £26.95

This is one of two definitive books on the C language in general (the other being C, A reference manual by Harbison & Steele, publisher Prentice Hall). Its aim is to cover the language specifically as set out in the ANSI C standard. As with the other C books, the tutorial section contains many examples and descriptions of how these work.

It includes a reference manual which contains numerous quotes from the standard itself and an attempt at explaining some of the jargon in slightly more understandable terms. Although it is possible to learn C as a complete beginner using this book, it assumes a reasonable knowledge of programming techniques in general and hence is more useful as a reference guide; essential for finer points of the language.

Conclusion

If you have no programming experience then First Steps in Programming Acorn Risc OS Computers is an obvious choice. For programming the Wimp any of the three books above are recommended, with Martyn Fox's being our personal choice.

Of the three books on C, Gordon Horsington's is probably the most suitable for the Archimedes, with Kernighan & Ritchie's book as a more complete reference.

If you are planning to write a program of any size or complexity then the PRMs are an essential companion to all of the other books.

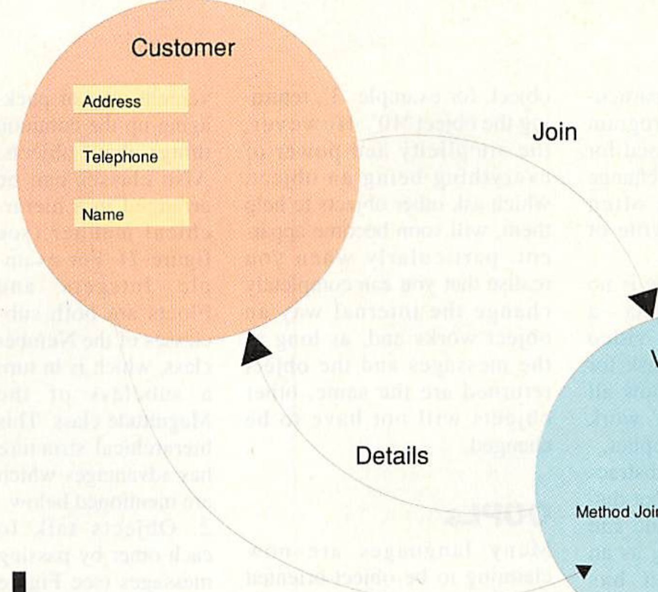


Figure 3: Passing messages between objects

No Objections

Object-oriented programming is arguably the future for programming on the Acorn range, with C++ just round the corner. Paul Horth takes a look at Lisp and Smalltalk on the Archimedes

Do you remember the arguments raging for and against structured programming a few years back, about the benefits and drawbacks of GOTOs and GOSUBs? Well, recently another rift between philosophies has appeared, but this time structured programming is under attack from the idea of object-oriented programming languages (OOPLs).

Here I'm going to have a look at why this way of programming has come to the fore on other machines and is actively being used by leading-edge programmers, and how it differs from the older methods.

Imagine that you wish to rent a video at your local video shop. If the video is not in stock you can ask the assistant to order it, and can forget about it until the call comes that it has arrived.

Behind the scenes the assistant calls his supplier, who in turn may have to ask the original distributor for more copies. The distributor may have to produce them from the master copy; if we are really interested we can follow the process back to the production of the master copy from film and even how the film was made.

The point is that normally we do not know, and do not care, what happens behind the scenes when we order a video; in the real world we call this 'delegation of authority', and computer scientists call this concept 'abstraction' or 'information hiding'.

In the early days of computing, programming was performed by entering binary 0s and 1s into the machine. As you can imagine, this was extremely tedious and prone to error, not least because the problem to be solved was not being encoded at a level we humans understand. We call this a zero level of abstraction (see Figure 1).

Soon it was spotted that it would be better to code at a higher level, using words (mnemonics) for the machine code instructions and letting the computer itself translate these to the binary 0s and 1s. This first level of abstraction is generally known as *assembler*.

The problem is that assembler still does not have the kind of structures we use when thinking about problems. We might perceive the problem as, for instance, adding two complex numbers together, but the assembler instructions to do this would be long, difficult and not obviously performing that function.

The second level of abstraction occurred with 'high-level' languages such as Basic, Fortran and Cobol. Now we can get nearer to the way we think by coding something like:

```
real=real1+real2:imag=imag1+imag2
```

for example. These early languages were, however, lacking in control structures, and flow of control tended to be by using GOTOs; gradually the third level of abstraction added control structures which were nearer to the way we work.

Level four

You may notice from Figure 1 that the sophistication of the code part of the languages has evolved considerably. This was partially matched by the data structures available – bytes and words evolved to strings, integer, floats, arrays and structures. However, the data structures did not go far enough to model the real world of customers, videos, complex numbers, and anti-cyclones.

One of the major problems with all the above levels of abstraction is that the code and data are perceived to be separate things. Therefore a data

Data	Example Code	Language	Level of Abstraction
0101010 1101011 1010101	010101110111010111	Machine code	0
Byte Word String	MOV R12,R4 ADD R0,R0,R1 SUB R5,R4,R0,LSL#2	Assembler	1
Integer Float String Array	I=1 IF T<A GOTO 180 IF T=A GOTO 120 IF I<20 GOTO 80	BASIC FORTRAN 66 COBOL 74	2
Integer Float String Array Record	REPEAT IF T<A PROCless IF T=A PROCequal I=I+1 UNTIL I>=20	BBC BASIC COBOL 85 FORTRAN 77 C PASCAL	3
Integer Float String List Dictionary Complex Customer Video	Class Complex real imag Method Complex real ^ real	Smalltalk Common LISP C++	4

Figure 1: Levels of abstraction

structure created for a particular piece of code or program could not easily be re-used for other programs, and a change in the data structure often meant a substantial rewrite of portions of the program.

In the real world there is no separation of code and data – a customer knows what video they want, and how to ask for it, though they don't know all the 'behind the scenes' work like how to contact a supplier.

The fourth level of abstraction overcomes this by not distinguishing between code and data; it treats everything as an 'object'. Each object has knowledge of its own internal state, and objects get results by asking other objects (sending messages) to perform tasks.

One object does not know or care how another object deals with that message along as a reasonable response to the request is received (in most object-oriented languages the response back to a message is, of course, another object). Each object knows how to respond to a message by having 'methods' which can access its own data, or in turn ask other objects for help by passing them further messages.

It may seem strange when you first meet an object-oriented language to think that '7' is an object that responds to the message '+' by performing an arithmetic addition on another object, for example '3', returning the object '10'. However, the simplicity and power of everything being an object, which ask other objects to help them, will soon become apparent, particularly when you realise that you can completely change the internal way an object works and, as long as the messages and the object returned are the same, other objects will not have to be changed.

OOPLs

Many languages are now claiming to be object-oriented and though they have some features of such a language, only a few really are. There are three distinguishing features of an object-oriented language:

1. Everything is an object, not just some bits of the language, and each object is an 'instance' of its 'class' of object. For example, Eric Bloggs and Ethel Violet could be instances of the class Customer, and though Eric and Ethel have their own individuality in terms of name, address, age and other factors, they share a common way of responding to messages. This is embodied in the Customer 'class'.

Both Eric and Ethel respond to the 'name' message by returning their name, or to the 'join' message by joining a video club. Classes are a convenient way of packaging up the common things about objects. Also classes can be arranged in a hierarchical manner (see figure 2). For example Integers and Floats are both subclasses of the Number class, which is in turn a subclass of the Magnitude class. This hierarchical structure has advantages which are mentioned below.

2. Objects talk to each other by passing messages (see Figure 3). One important point is that objects cannot access other objects' information (unless that object responds to a message by providing said information). The same applies to updating the information. Because of this, objects insulate their information from the outside and so changes in the information structure do not impact the whole program.

3. As already mentioned in point 1, objects are always instances of a class. These classes in turn are always subclasses of some higher class: the superclass. One advantage of this is 'inheritance' (see Diagram 4).

If a message is passed to an instance of a class and no method is defined in that class for that message, the message is automatically passed up to the superclass (and if not defined there, the superclasses' superclass, all the way up to Object eventually). In this way a newly defined class inherits all the methods of its superclass. It can of course redefine any old methods or define new ones that are specific to itself. Inheritance minimises the effort required in writing a new class.

Any object-oriented language will have some or all of the above features – the important concepts are that we should be able to use objects to hide the code and data behind an easy interface (information hiding) and use an inheritance mechanism to be able to re-use code and data structures.

In a world where some large pieces of software exceed a million lines of code anything that allows us to re-use pieces of code and data that embody some useful concept or object is going to be useful.

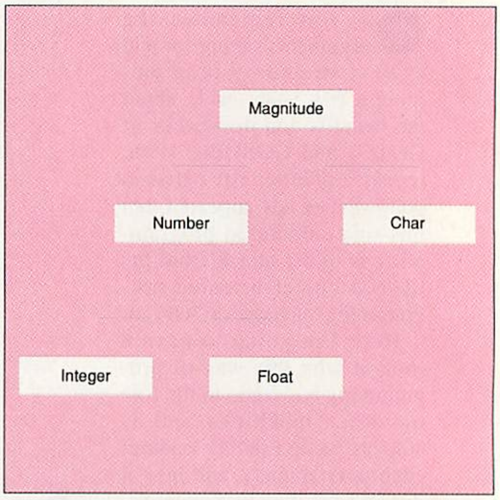


Figure 2: Hierarchical classes

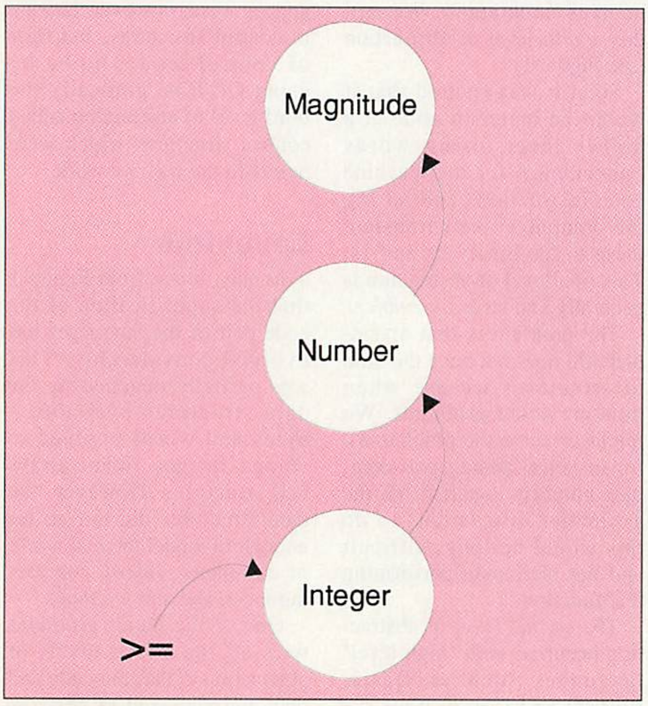


Figure 4: Inheritance

Objects on the Arc

The question arises: is this way of programming available on the Archimedes? The simple answer is yes, in the form of the original (and in my opinion the best) language for object-orientation, Smalltalk.

Unfortunately a full-blown Smalltalk environment (it is much more than just a language) would set you back over £500. Luckily, if you just want to experiment with the concepts described here, a cut-down version called Little Smalltalk is available from David Pilling for only £5.99, and XLisp, a version of Common Lisp with object-oriented features, is also available from the same source.

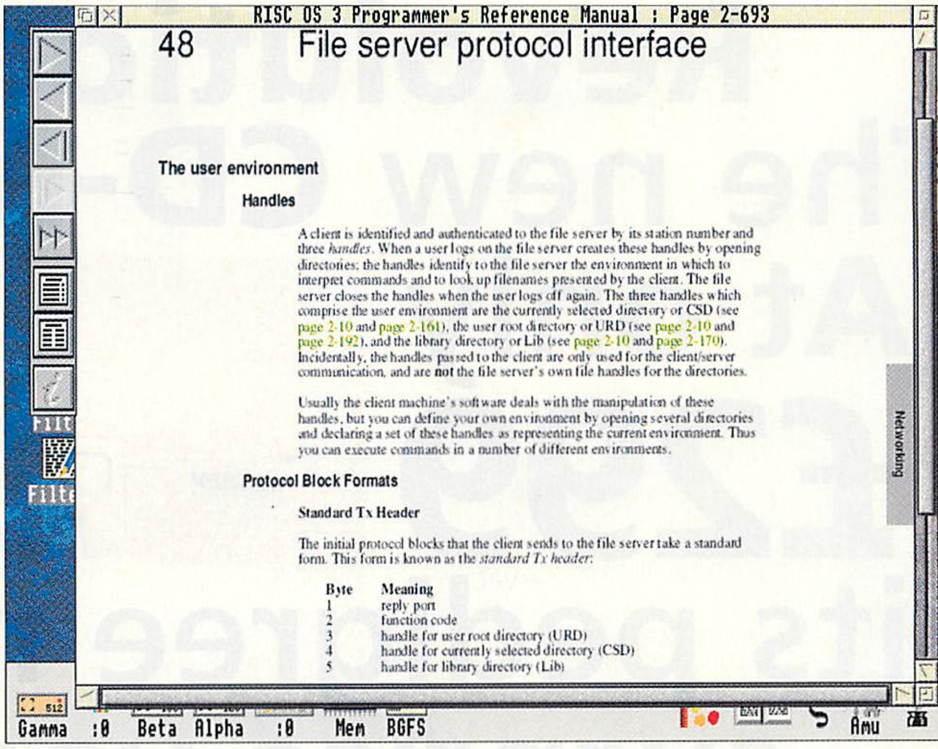
The other famous object-oriented language, C++, is not currently available, but as mentioned in December's *Acorn User*, a pre-compiler should be arriving soon.

When the pre-compiler does arrive, it will open the doorway to vast realm of other software. Then we can look forward to larger programs with more features and fewer bugs.

Product details
Products: XLISP, Little Smalltalk
Supplier: David Pilling Software
P O Box 22
Thornton Cleveleys
Blackpool
FY5 1LR
Price: £5.99

A light read

The Programmer's Reference Manuals are now available on CD-Rom. Dave Lawrence takes them for a spin



Last September I reviewed the long awaited Risc OS 3 Programmer's Reference Manuals, and finished the piece with the tantalising titbit that a CD version was in the pipeline. Emerald Publishing has nearly removed all the bugs from its reader software and *The Tekkie Disc* is now available.

For your 99 quid not only do you get the full Programmer's Reference Manual and the Style Guide, but also the manuals for the Desktop Development Environment, AAsm (the assembler), C and BBC Basic, making this a very comprehensive development resource. Emerald hopes to add the User Guide and Application Guides in a second release next year.

Reading the manuals

The manuals are read with a desktop application called *Librarian*, supplied on a floppy, which can be installed on a hard disc. Accessing a book is then simply a matter of double-clicking on it.

Librarian's window shows one page at a time of the manual, in exactly the same format as the printed version, complete with fonts, headings, program listings, illustrations, tables, pictures, and so on.

This was, in fact, a stipulation of Acorn's – make it look identical or we won't let you publish it. This even had to be taken as far as recreating the large amount of white space in the manuals, which does make the pages rather on the large size and made a 'two-up' view largely impractical.

A multiscan or VGA monitor is really required and even then Mode 27 isn't too hot. Ideally you need a mode like ColourCard's 122 (1152x848) but standard Mode 31 is quite acceptable. Even then a large proportion of your desktop is eaten up, so maybe a second machine...

From page one there are a number of ways to proceed. You can turn the pages one at a time (with toolbox icons), jump to a given page, move straight to the contents or index or search for a string. The last option should be used with caution as searches can take an awfully long time (the PRM is a 15Mb file). You can restrict the search page range, but I would like to see Search Contents and Search Index options, and incremental index searches – pressing P would take you to the Ps, pressing A to the PAs, then R to PAR, and hence Parallel, for example.

Once you've found your page you'll run in to the main limitation of the software: there are no print or export options. Again, this is an Acorn stipulation; after all, Acorn doesn't want to lose out on selling its paper copies. In fact a 'Print One Page' option is likely to appear in the second release of the software.

What you can do though, is to mark important places with bookmarks and write your own notes on the pages, which are saved on hard disc. You could, for example, have one bookmark file containing SWIs, one with star commands, one with service calls and so on.

Hot links are also provided: when the manual says 'see page x for more details', this is displayed in green on the screen and clicking on it takes you to the correct page.

I'd like to be able to click with Adjust to keep the old page open, but you can always get back to the previous page with the step back icon. You could open a new view and hot link from there, which does start to get fiddly for this purpose but is a useful feature in its own right.

The Tekkie Disc cannot be faulted on content – everything is there (and doesn't take up four yards of shelf space). But I must say that *Librarian* needs a bit of work to make it easier to use. At the moment I'm battling with it rather than using it, and my 'wish list' had ten things on it within five minutes of using the Rom.

Emerald were very interested in my comments and criticisms though, so with any luck version 2 will be a lot more friendly.

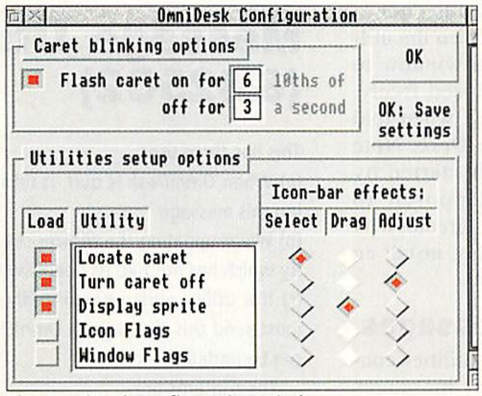
So, who will buy it? Probably software developers and gadget-mad programmers. The high requirements and obvious high technical content means that this product is not really pitched at the end user. For £99 it is very good value for money, although I don't know yet whether I'll be able to discard my paper manuals. We'll have to wait and see.

Product details

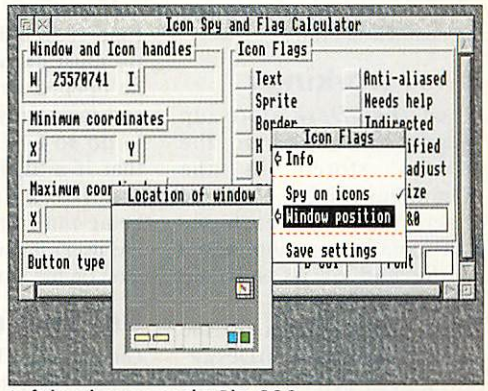
Product: The Tekkie Disc
Supplier: Emerald Publishing
Tel: (0223) 840138
Price: £99 + VAT

All things to all men

Richard Hallas describes how to write applications for use with OmniDesk



The OmniDesk configuration window



Left-hand menus under Risc OS 3

This article is about creating utilities which interface with the *OmniDesk* utility manager, as provided on the October and November cover discs. I assume that you know how to program the Wimp.

All the utilities are complete, self-contained programs in their own right: *OmniDesk* does not look after their Wimp routines for them, and so you must be familiar with writing for Acorn's desktop before you can contemplate a full *OmniDesk* utility.

However, if you fancy the prospect of writing a utility which must conform not only with Risc OS guidelines but with a few others as well, then read on.

Having a set of utilities which appear as entries in a single manager utility's menu is very convenient, and the more *OmniDesk* utilities that appear the better: we at *Acorn User* are more than happy to publish readers' submissions, especially *OmniDesk* utilities and *Bio* modules.

The basics

As they now exist, all the *OmniDesk* utilities can be copied to any disc and used on their own; they only become dependant on *OmniDesk* if they are started up by it in the first place.

The listings of the utilities provided so far are intelligible, and follow exactly the same structure and contain plenty of comments. They all start off with specialised Wimp routines for decoding menus, handling mouse clicks and so on, followed by a set of non-specific but very useful routines which are identical in all programs.

These cover things like updating icons and ticking menus, and are tailored to reduce screen flicker wherever possible. Finally, each listing ends with a set of program-specific routines.

While it would certainly be possible to convert an existing utility to converse with *OmniDesk*, it is really better to write a new utility from scratch, basing it around the

Message_UtilDeclare (&825C0)

This message is very important, as it tells *OmniDesk* all the major details of the utility which sends it. When a utility is run it must read its start-up string, and if it ends with '-OmniDesk#', it must read the *OmniDesk* task handle (the # part) and immediately send a Message_UtilDeclare message back to *OmniDesk*. The message block is comprised as follows:

Block+20 (4 bytes) contains the task handle of the utility.

Block+24 (20 bytes, including ASCII 13 terminator) contains the task name of the utility. This is used both in the *OmniDesk* Utilities menu and in the Preferences window.

Block+44 (11 bytes, including ASCII 13 terminator) contains the file (leaf) name of the utility, which will of course begin with '!'.

Block+55 (77 bytes with terminator) contains the help text about what the utility does if you activate it with the Select or Adjust mouse buttons.

Block+132 (77 bytes with terminator) contains the help text about what the utility does if you drag a file into it.

The two help messages are of huge importance, as their presence determines how *OmniDesk* treats the utility. A utility is free to accept either dragged files or icon bar clicks or both.

It should not distinguish between clicks with the Select and Adjust buttons, since either button may be configured to start it up via the *OmniDesk* preferences window. (If installed on the icon bar, a utility should ignore Adjust-clicks.)

So if the utility provides a mouse-button help message, *OmniDesk* knows it will start immediately when selected from the Utilities menu, or when the *OmniDesk* icon is clicked (if this has been configured in the preferences window.)

Note that the mouse-button help message must start in mid-sentence: *OmniDesk* itself will prefix it with the 'Click Select/Adjust to ' as appropriate.

If the utility provides a drag help message, it must be of the form 'Drag whatever file here to ...'. *OmniDesk* will then know that the utility can accept a file dragged into it, and will unshade the Drag radio icon in the Preferences window.

Every utility should supply at least one help message. If neither is supplied, then the utility will not be configurable in *OmniDesk* (its radio icons will all be shaded), and will only be accessible via the Utilities menu. Furthermore, this will result in a drag window opening (containing no help message), which may not be desirable.

Interactive help is very important in *OmniDesk* and is provided on everything, including menus in Risc OS 3.

edited framework of an existing *OmniDesk* utility.

Inner workings

When *OmniDesk* starts up it goes through all the utilities stored in the <OmniDesk$Dir>.Utilities directory and runs each one with some information tacked on the end of its start-up string.

This information is of the form '-Startup-OmniDesk#' (no spaces after the first), where '#' is the task handle of *OmniDesk* itself.

If the '-OmniDesk#' bit is not present, it means the user has run the utility by double-clicking on it in a filer window in the normal way, so the utility must install an icon on the icon bar as per usual and ignore any messages from *OmniDesk*. This is most important, as only one copy of any utility must be under *OmniDesk*'s control.

Whenever *OmniDesk* starts a utility, the start-up string will always end with '-OmniDesk#'. There are two additional options, either of which may also be present: '-Startup' means that *OmniDesk* is starting up all the utilities, and just requires some information, but does not require the utility to actually run.

Therefore, if '-Startup' is specified, the utility must declare itself to *OmniDesk* (see later) and exit immediately.

If '-Exit' is specified, it means that the utility must open its main window and run as normal, but quit as soon as its main window is closed.

If neither '-Startup' nor '-Exit' is specified, then the utility must allow its window to be opened and closed freely, and must only quit when told to do so by *OmniDesk*. Note that if a utility is started by *OmniDesk* (as opposed to being run from a directory by the user) it must not install an icon on the icon bar.

Sending messages

OmniDesk and its utilities converse via a set of messages (which have officially allocated numbers from Acorn). These are detailed in the separate boxes.

Further details about all these messages are supplied in the *Docs* directory within *OmniDesk*. Although they might initially seem fairly complex, these messages are actually quite simple to deal with, and many cases can be dealt with by single procedures within a program.

Stylistic requirements are explained in a text file on the disc, but although all these requirements may seem rather daunting, there is really not a huge amount of work needed to make a program converse with *OmniDesk*.

Furthermore, many routines (such as the ones to deal with the window-snapping features) are identical in all utilities and, providing you are programming in Basic, you can copy the necessary bits out of an existing utility.

So, why not have a go? Earn yourself a bit of fame and a small fortune, and have your *OmniDesk* compliant utilities published by *Acorn User*.

Message_UtilQuitting (&825C2)

This has three uses:

(a) When *OmniDesk* is quit, it tells all its utilities to quit by broadcasting this message

(b) When updating the choices set in the Preferences window, any utility which has not had its 'load' switch set On is told to quit.

(c) If a utility quits unexpectedly, or is quit via the task manager, it must send this message to *OmniDesk* so that its internal utility record can be updated.

The contents are:

Block+20 (4 bytes): task handle. In cases (a) and (b), the task handle will be that of *OmniDesk;* in case (c), it will be that of a utility.

Message_UtilLoadAck (&825C4)

This message must be sent to OmniDesk once the file from the UtilOpen message has been processed. *OmniDesk* will perform any tidying-up necessary (such as deleting <Wimp$Scrap>). As with the UtilReside, this message has no contents.

Message_UtilReside (&825C3)

This is a simple message, which has no contents other than the normal ones up to Block+20. If a utility receives it, it means that its 'load' switch in the *OmniDesk* Preferences window has been set to On, and therefore it should not quit until specifically told to do so by *OmniDesk*.

If the '-Exit' option was specified in the start-up string, this condition must be negated. Note that when the '-Exit' option is in force, the utility must quit when the user closes its main window, but before doing so it must send *OmniDesk* a Message_UtilQuitting.

Message_UtilOpen (&825C1)

OmniDesk sends this message to a utility when it wants it to start up. The contents are as follows:

Block+20 (4 bytes) is the action required: if the value is 4, this means 'behave as though Select has been clicked on the icon-bar icon'; if the value is 2, this means 'behave as though a file has been dragged to the icon-bar icon'.

Block+24 (20 bytes including ASCII 13 terminator) is the task name of the receiver utility required. It is very important that a utility checks that the task name at Block+24 is its own taskname; if not, the message should be ignored. Under some circumstances, this message has to be broadcast by *OmniDesk*, which means that all the utilities will receive it, whether or not it was intended for them.

If the content of Block+20 is the value 4, the utility must simply open its main window (or perform whatever task it normally performs when activated). If the content is the value 2, some additional information will be supplied:

Block+44 (4 bytes): estimated size of data to load in bytes.

Block+48 (4 bytes): filetype of file dragged to *OmniDesk*

Block+52: full pathname of the file.

If the filetype at Block+48 is inappropriate, the utility should issue an error message, send a Message_UtilQuitting (see below) to *OmniDesk* and quit; otherwise it should process the file as normal and, when finished, send a Message_UtilLoadAck (see below) back to *OmniDesk*. Note that *OmniDesk* will deal with <Wimp$Scrap> transfer protocols itself, so nothing 'clever' is needed here.

However, if the application is being run independently of *OmniDesk* (and has installed an icon), it must deal with such complexities itself.

The word processor for Acorn RISC computers

Impression Style is a new word processor combining the best points of all earlier word processors with many powerful features new to the Acorn platform. Impression Style is a word processor suited for all users - the occasional letter writer, student, small businessman or professional writer. It also incorporates many DTP features so that it can handle complex page layouts with ease.

Impression Style is a capable and very powerful product but it is also an extremely easy to use word processor. In order to make it simple to use, we have incorporated the very latest software technology, found on no other Acorn word processor, including two types of on-line help - interactive help and full hyper-text help. Not only can you tell at a glance what all the controls and menus do, there is comprehensive on-line documentation explaining the features. Simply double clicking on a topic or keyword will display an explanation - and of course you can do this on screen while using Impression Style.

IMPRESSION Style

It also offers drag and drop editing - the simplest, most intuitive way to edit documents. There is an integrated thesaurus and dictionary with definitions (another first for Acorn machines) both based on the highly respected Collins publications. Impression Style is the wordsmith's dream come true.

Modern word processing involves much more than creating and editing long text files - producing monospaced typewriter-like documents is often no longer acceptable. Therefore Impression Style offers page layout capabilities second only to the very best DTP packages and it does this without compromising the word processing abilities.

It allows graphics to be embedded into the text or placed anywhere on the page and includes another first for Acorn users - OLE or Object Linking and Embedding.

OLE EXPLAINED

If you want to edit the embedded object (this is usually a graphic, but it could be other data such as a table or equation) you simply double click on the data, which is then transferred directly to the appropriate editing application - for example !Draw. Once you've edited the graphic, simply closing the window will transfer the data directly back into Impression Style. This powerful technique couldn't be more convenient or easier to use.

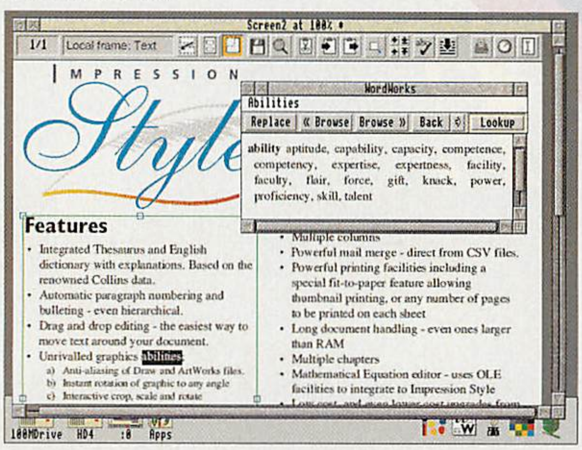


Illustration shows new button bar enabled at the top of the screen. This offers direct, instant access to commonly used functions such as saving, cut, copy, paste. One button is the new zoom tool which allows ArtWorks style drag-zoom into any region of the document.

It also shows a word selected in the text and the pop-up thesaurus window showing a list of synonyms. Note the smart selection of root word.

Computer Concepts Ltd

GADDESDEN PLACE, HEMEL HEMPSTEAD, HERTS HP2 6EX. TEL.: 0442 63933 FAX: 0442 231632
EMAIL: Info@CConcepts.co.uk.

There isn't room to cover all aspects of Impression Style, but some other features include:

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HOW TO UPGRADE

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Existing Impression II owners can upgrade to Impression Style for £29.00 + VAT but a further upgrade to Impression Publisher, when it is released, will cost another £29.00 + VAT (£34.07 incl.)

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* This offer is open to owners of the following packages: Wordz, Ovation, First Word Plus, TechWriter, EasiWriter, StartWrite and Advance.

Word Processing

Intelligence test

Artificial Intelligence has always fascinated computer programmers. Barry Wickett explains why

Artificial Intelligence (AI) is a huge area that has been largely unexplored by most Acorn users. The two reasons usually given for this are that it is far too complex a field and that there's no use for it in the small computer world – I'm about to show that both these points are largely untrue.

Firstly we need to know what AI actually is. The basic definition is the imitation of the mental thinking of man by computer. Obviously to achieve this entirely would be far too difficult for today's computers, so what we do is concentrate on the part of this thinking that we need to mimic.

If the responses we get from the computer are the same that we could expect from a human, then we have AI.

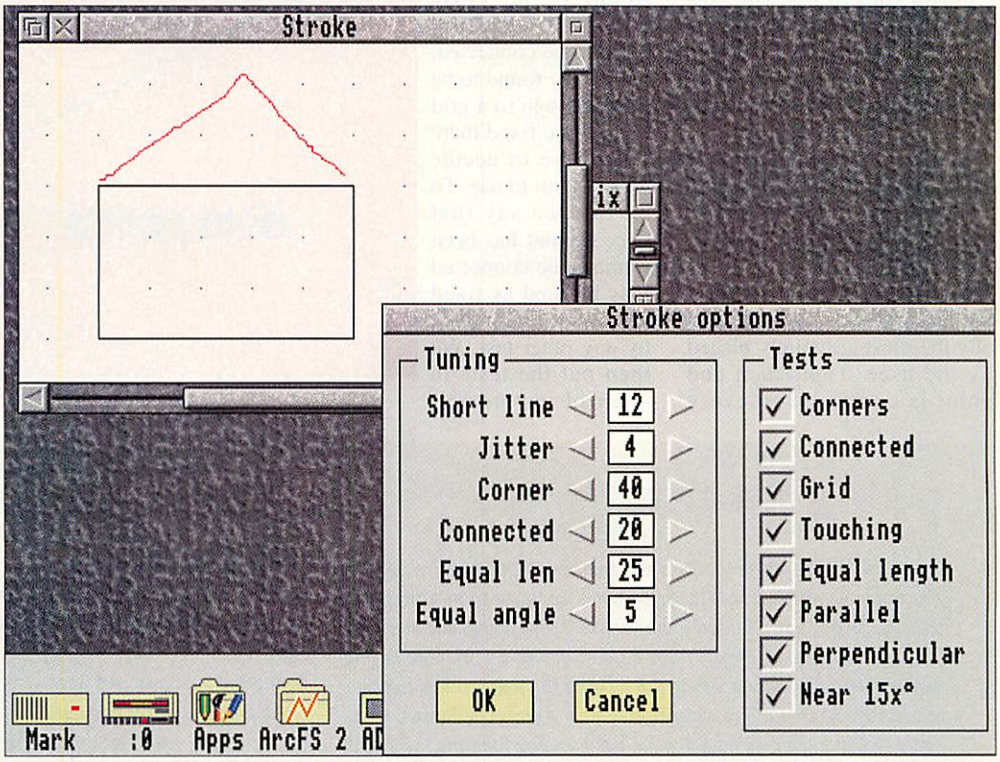
Intelligent drawing

This same basic principle is used in my next program, which tries to be intelligent by manipulating the user's input. It takes a rough input from the user and works out what it really means, producing a more accurate output.

Programs like *Draw* and *ArtWorks* are powerful tools and can produce very professional results. But like all tools it takes time to learn how to use them, find out which ones you need and then spend time doing it accurately. Most good designs start off as a rough sketch on a scrap bit of paper.

This then gives you an idea of what the final design will look like so that you can then do it properly using *Draw* or something similar. Wouldn't it be great if you could just show your computer your rough sketch and say: 'It looks something like that', then for your machine to produce an accurate and precise drawing from your idea. This is what *Stroke*, off the cover disc, goes someway to doing.

In *Stroke* you can use the mouse to draw a freehand sketch in the window, in the same way that you would use a pencil on paper. The program then tries to work out what you actually meant to draw. For instance if you sketch a box it tries to figure out if you meant it to be a perfect square or more of a rectangle. Then say you make this box into a house



Stroke converting free-hand drawing into straight lines

The couch test

Artificial Intelligence may all seem rather difficult and complex to achieve, but this is not always the case. For example think of yourself going along to a therapist; you lie back on the comfortable leather couch and the therapist starts asking you all about your problems, making you talk all about them and perhaps making you go into detail about certain things. The conversation might go something like this:

Therapist: How can I help you?
Patient: I am feeling sad.
Therapist: Why do you feel this way?
Patient: My hamster has just died.
Therapist: Tell me more about it.
Patient: I miss him?
Therapist: What makes you miss him?
and so on.

A program that simulates the above situation is provided on the cover disc for you to play with and to save on your therapy bills. Although it gives you the impression that the computer is actually understanding what you are saying, it is most definitely not: all the computer is doing is manipulating what you have said with a few simple algorithms. It uses key words to turn around what you have said to probe you further. Add a few standard replies, a random element and you have produced a computerised therapist.

The answers the therapist gives are those which you might expect from a human, thus from the definition above we have achieved AI.

by adding a roof. The program sees that the roof is meant to be connected to the box, even if you didn't draw it all that accurately. You would then have a house with perfectly straight walls and a roof that didn't leak – all from a few quick strokes of the mouse.

The program is of course not intelligent, it is simply following a set of precise rules. It takes the initial stroke and performs tests to compare it with 'guesses' of what it should look like. If these comparisons are close enough then the 'guess' is used.

First it tries to find any corners in the initial stroke by looking at any sudden changes in direction. It divides the stroke up into smaller strokes at these corners and deals with each one separately.

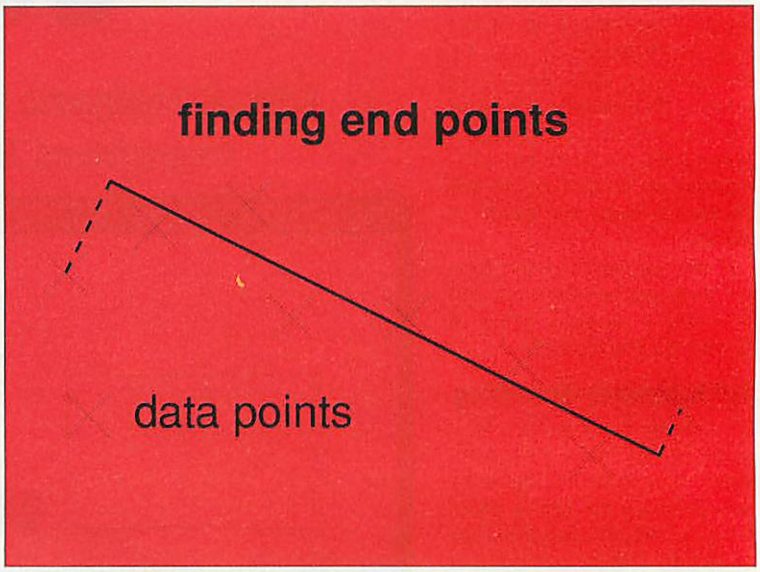
For each stroke a line is fitted with the end points being found by dropping a perpendicular from the first and last points – this is done because the first and last points are usually the most accurately placed by the user. Then each end point is compared to every other end point that has already been drawn, if it is close enough then the computer assumes that they are meant to be connected and moves the end point accordingly.

A similar test is then performed on neighbouring grid points to see if they are meant to be connected. Yet another closeness test is made to see if the end point is close enough to another line to actually start on that line.

A problem arises here. Say, for example, a point has been found to be close enough to another point to be connected, but is also found to be close enough to a grid point to be fixed there – we have to decide which point to use. To do this we say that once a point has been found to be connected it is marked as fixed and cannot be moved by any other test. We then put the tests in order of importance, thus solving the problem.

A comparison is then made between the length of this line and others. If it is similar in length then it is made equal. If an end point is fixed then this is taken into account when extending the line and obviously if both end points are fixed then this test is ignored.

The last three tests deal with the angle of the line. First the line is compared to other lines to see if they are nearly parallel or nearly perpendicular and the angle is changed accordingly – again fixed points are left fixed. Finally the angle of the line is compared to the nearest multiple of 15° and if it is close enough the angle is changed.



Finding the end points for a line

Using Stroke

Run *Stroke* and click on its icon to open an empty window, where you create all of the input. The program is designed to be a simple as possible, and quite intuitively the mouse is the pencil and the window is your piece of paper. Have a go at drawing a triangle on the 'paper' by holding down Select and moving the pointer. The computer will straighten out any wiggles and draw a perfectly formed triangle. If the triangle was meant to be right-angled then the result will indeed be a right-angled triangle. Alternatively if you or the computer makes a small mistake then click Adjust to delete the last line created.

Now have a go at drawing a simple picture like a house. See how easy it is to draw boxes and a chimney that actually joins the roof. You can save your drawings as a *Draw* file in the usual manner using the menu option Export (click Menu over the window). Sometimes the program will fail and change things incorrectly, like connecting two points that shouldn't be so. Well, this is partly because every user handles the mouse differently; their accuracy is going to be different and particular tests might not be very useful to them. So the system is designed so it can be finely tuned to suit each user. Choose Settings from the menu and a window will appear with a list of options that can be changed.

There are two sections to the options window. The second is quite simple – only the tests that are chosen will operate whilst drawing. The first section contains a list of tolerances that are used with the tests and these can be altered to suit your style. This is what they do:

Short line – any line that is shorter than this length is discarded.

Jitter – minimum distance the mouse has to move before a new data point is added.

Corner – greatest angle allowed between any three points before a corner is detected and marked. This value has to be surprisingly high.

Connected – points and lines within this distance from each other are deemed to be connected.

Equal length – line lengths differing by less than this value are deemed to be the same length.

Equal angle – line angles differing by less than this value are deemed to be the same angle.

The program suits the need of showing what can be done by using AI but it could always be extended. Circles could be detected and their radii and centres 'intelligently' found. If the program failed to match a stroke to a line or circle then a bezier curve could be fitted instead.

Now some people may ask if these programs are really AI, or are they just pretending? Well according to my definition at the start of this article the answer is yes, to both parts: they give responses that we could expect from a human and therefore constitute AI, but the computer, not being naturally intelligent, can only pretend to be intelligent. AI is simply the following of algorithms to produce an 'intelligent' output. If we could work out the algorithms that the human brain uses to produce its output and reproduce them on a computer then we would have true intelligence: neural networks take this approach. Whether the brain works by simply following algorithms is a question that is far too deep for me to answer; I'll leave that to the philosophers. It would be interesting to hear what you think.

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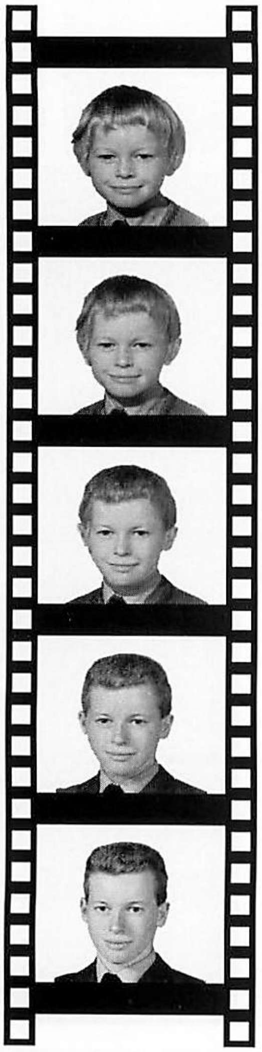




Product guide

Complete guide to
Oak Solutions' products and
prices inside

Latest Multimedia Developments

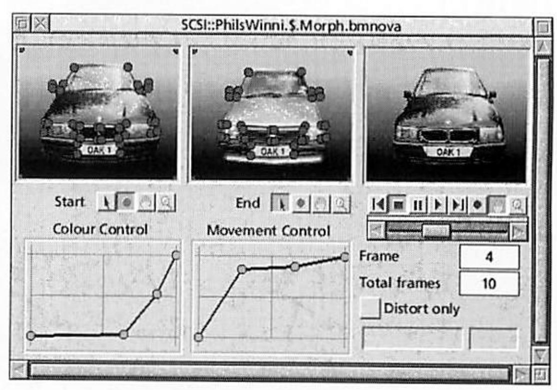


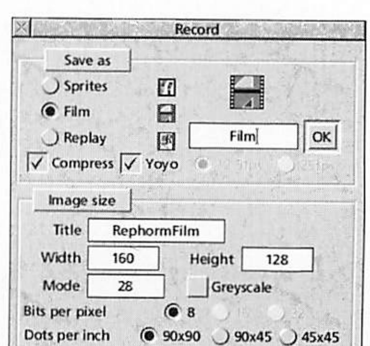
!Rephorm



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- creates Ace Film files as used in Projector (supplied), Genesis, Titler etc
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- high speed operation even on large sprites see changes 'live' as you drag control points
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- any intermediate frame can be saved as a sprite
- animations can be edited using !Splice - available separately





Acorn Replay

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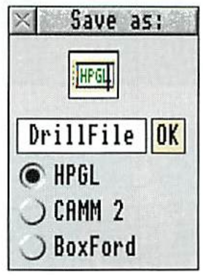
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What's New?

The Plot Thickens

DrawPlot (supplied as part of Draw Print&Plot and bundled with Design Processor, Oak PCB and Oak Logic) is enjoying enormous popularity driving HPGL compatible plotters (including the Roland CAMM series) in classrooms across the country. DrawPlot is able to quickly and simply plot, cut or engrave drawings from !Draw and other applications which produce drawfiles. DrawPlot has recently been upgraded to support Graphtec plotters, and work is underway on drivers for those Plotmate A3M and A4M series plotters which are not HPGL compatible.



Users of Roland CAMM 2 machines and Boxford CNC millers can now take advantage of a new drilling facility in Oak PCB. A driver is now included to allow the holes in the PCB to be drilled automatically on the above machines.

Oak Solutions on the move

Due to expiry of the lease on their existing offices, and after nine months of temporarily running the company on split sites in Cambridge and Bradford, Oak Solutions have finally moved in to new permanent headquarters. The new building (actually an old building) is a large 18th Century house with charming oak beamed offices for the programmers and technical support staff and plenty of room for production and administration all under one roof.

The new move will be a great improvement over the previous two site arrangement, and will significantly enhance the efficiency of the company. This should reflect in reduced delivery times across the entire product range.

Oak Solutions' new address is:

Dial House
12 Chapel Street
Halton
Leeds
LS15 7RN
Tel: 0532 326992
Fax: 0532 326993

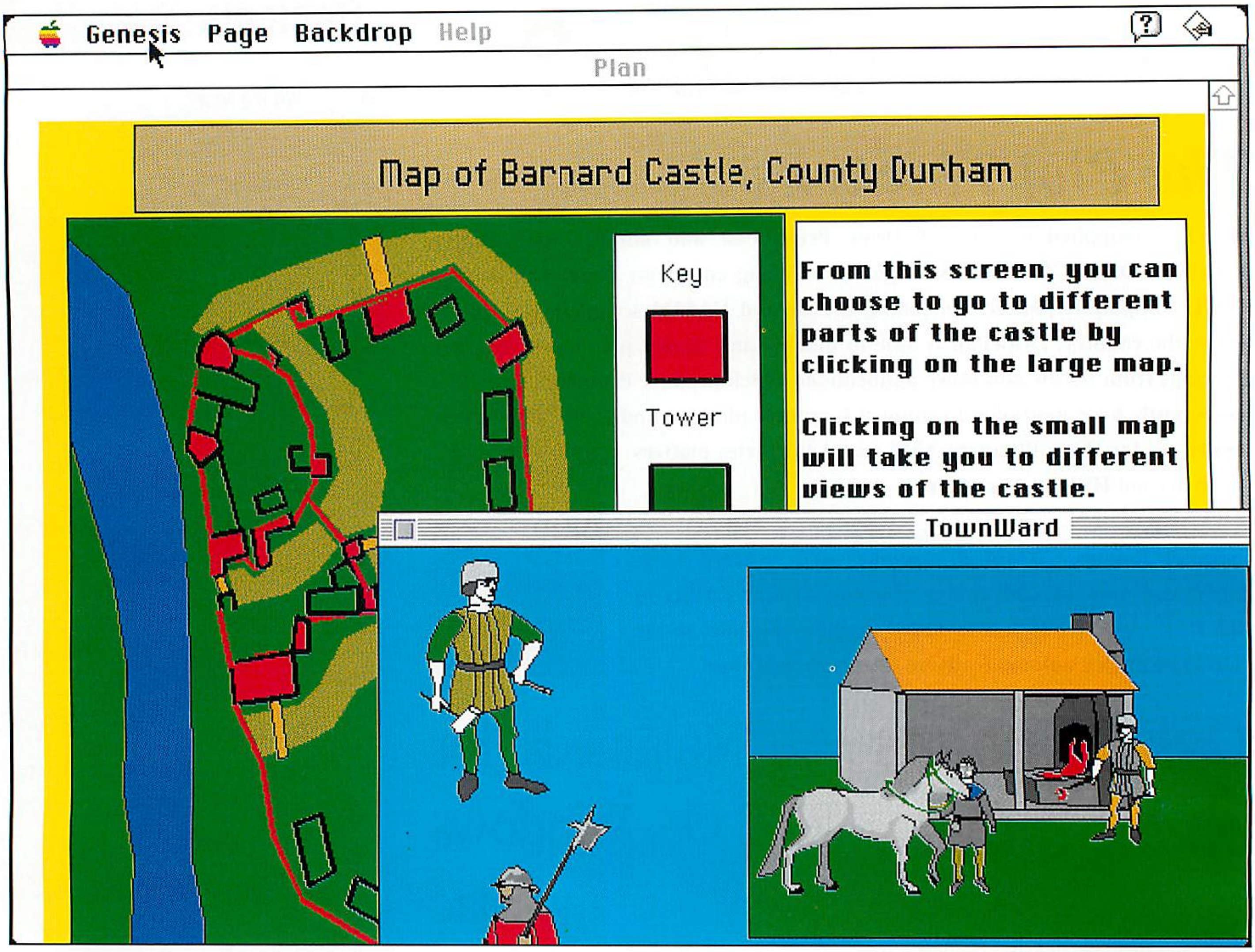
Multimedia for RISC OS, Windows and Mac

Oak Solutions have scored another first with the introduction of Genesis for the Apple Macintosh. Genesis is the only multimedia authoring system capable of producing file compatible applications for all three major hardware platforms.

The Archimedes remains the most powerful development platform, but users can, in fact, author on any of the platforms, and produce discs which will work without change on any of the other machines.

The launch of the Macintosh version of Genesis coincides with new releases for RISC OS. Genesis Project, effectively replaces Genesis Plus and provides a much easier user interface with a host of new features. Genesis Professional replaces Genesis 2, again with a much easier user interface and lots more power. At the top of the range, the Genesis Software Developers Toolkit includes Genesis Professional and Genesis for Windows and Mac, along with a range of tools and licences to freely distribute the runtime browser with applications created using the system.

Contents



Start 1994 with 3 new

Oak Solutions announce a host of important new developments in the Genesis arena.

Genesis has for many years been the leading multimedia authoring package on the Archimedes, and one year ago took a significant step across onto the Windows platform. However, the start of 1994 brings with it the most significant developments to Genesis so far.

A range of new Genesis packages has been released, with two versions for the Archimedes and the introduction of Genesis for the Apple Macintosh. The launch of Genesis on the Apple platform means that for the first time, schools can have access to the same multimedia authoring package on all the major platforms. File compatibility exists across the Archimedes, Windows and Macintosh versions of Genesis, and since the Mac and the Archimedes can both read DOS discs, the same disc can be used in all three machines.

This news is not only significant for schools, but also for multimedia software developers. Using Genesis as the multimedia 'engine', software can be created which will run without change across all three main educational hardware platforms. Both floppy disc and CDROM based software can be created, and providing that a few simple rules are obeyed (such as not accessing the operating system directly and keeping filenames down to the 8 character limit of DOS) production and distribution of software is simplified. Only one disc (DOS format) or CD needs to be duplicated as it will work across all platforms, with the Browser being the only machine specific code.

Already, there are many people using Genesis commercially to produce multimedia software, and this number is sure to increase dramatically now that full platform independence has been achieved. Mindful of this, Oak Solutions have launched Genesis SDK - the Genesis Software Developers Toolkit.

This pack contains versions of Genesis for all three machines, with the Archimedes remaining the preferred platform for the development work. Genesis SDK includes licences to freely distribute (without royalty payment) the runtime Genesis Browser applications for Archimedes, Windows 3.1 and Macintosh machines.

Things haven't stood still on the Archimedes either. Oak Solutions have had the benefit of plenty of feedback from both educational and professional Genesis users alike.

The excellent Horizon project in Hampshire has also generated valuable comments from teachers and pupils actually doing multimedia for real.

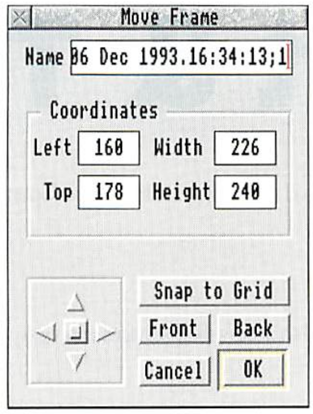
In general, users are happy with the power and flexibility of Genesis, but would like access to the system to be easier, especially for those new to the system.

To this end, a significant amount of work has been done to make the use of Genesis much easier, and also to increase its power and versatility.

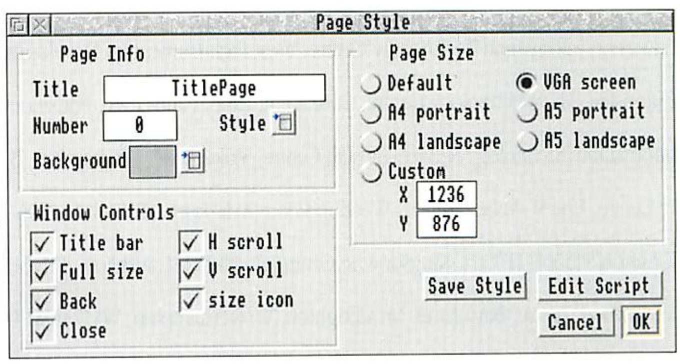
Two new versions of Genesis have been launched; Genesis Project and Genesis Professional. Genesis Project is the new entry level version for the Archimedes. It effectively replaces Genesis Plus, and provides a multimedia authoring environment for users who do not require access to the sophisticated facilities offered by the script language.

Genesis Professional provides the ultimate in high powered multimedia authoring allowing access to a powerful script programming language which means that you can program Genesis Professional to do virtually anything!

Both these new versions of Genesis benefit from a completely revised user interface, designed both to make Genesis easier to use, and also to make available a large range of new features.



Much greater control of frames is now available, with the facility to bring frames to the front or put them to the back. New frame border styles have been added to speed the creation of 3D style buttons and frames. The business of setting up pages is aided by the provision of a style sheet facility (similar to master pages in DTP systems). Predefined pages are provided, suited to a variety of uses, and the user can define their own style sheets and store them in a style sheet library so they can be called up on request. Style sheets can define the size of the page (eg VGA screen, A4 portrait etc), and can also define any resources and frames you wish to appear on each page (eg a next page button or a letter heading).

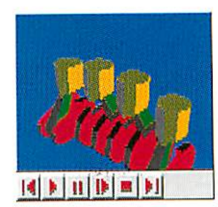


New dialogue boxes are provided for linking pages and handling events and actions. Handlers can easily be set to cause any action to occur. Operations such as causing pages to close after linking to another page can now easily be handled without recourse to the script language.

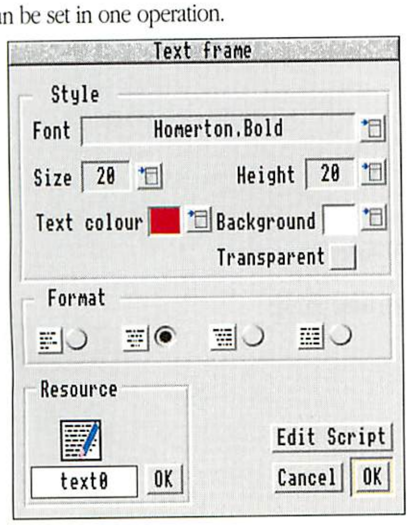
The business of starting a new application from scratch has been simplified so that clicking on the icon bar icon of an 'empty' Genesis editor will pop up a dialogue box allowing a new application to be saved to disc.

An options dialogue box allows global control over various aspects of the application. It can cause all links and frames to be highlighted, and allows global control of the grid. An option is available to dither colours to more closely match to the required colour than the current screen mode allows.

versions of Genesis



Previous versions of Genesis on the Archimedes have relied heavily on the RISC OS menu system for driving the software. Genesis Project and Professional use a greatly simplified menu structure, and a series of user friendly dialogue boxes so that all aspects of the style of an object can be set in one operation.



The emergence of colour cards for the Archimedes and the announcement of the new VIDC chip, has meant that the colour model used by earlier versions of Genesis (relying on the 16 WIMP colours) was not able to fully exploit the new technologies. The new versions of Genesis are based upon a 24 bit colour model, and so can represent over 16 million different colours.

Genesis Project and Genesis Professional can deal with more data types than their predecessors. Frames can handle files from Computer Concepts' Artworks, Acorn Replay films and even .BMP files from the Windows environment.

Many frames can, if required, automatically have their own buttons to control the contents of the frame. For example, a Euclid frame can have buttons to control the view of the 3D image and animation and sound sample frames can have buttons to start and stop the action.

An upper limit to the rendering complexity level for Artworks files can be set, and the user can choose whether or not to compress resources when pages are saved.

In addition to the new user interface and new features, Genesis has been significantly speeded up. A turbo-loading system has been implemented so that pages open quickly, and with the minimum number of transactions with the filing system - particularly significant on networks and CDROMS. In fact, the new Genesis turbo loading system in conjunction with changes Acorn have made to CDFS have yielded a tenfold performance increase.

With upgrade paths available for existing users, these latest developments will ensure that Genesis maintains its position at the forefront of multimedia authoring.

See page 5 for price details.

Support & Training

There are now seventeen Oak Regional Centres that are committed to offering quality local support to education.

Oak Regional Centres:

- can provide you with cost effective training
- hold libraries of software so that schools which are entitled to access their services can view and try software before they buy
- allow you to purchase Oak Solutions' software directly

Bedfordshire Micro Electronics Unit, Russell House, 14 Dunstable Street, Ampthill, MK45 2JT, 0525 405220

Cheshire Micro Unit, Rockmount Court, 1-3 Liverpool Road, Chester, CH2 1AA, 0244 390088

CITE, St Ivo School, High Leys, St Ives, Cambridgeshire, PE18 8RF, 0480 460280, Fax: 0480 460270

Cleveland Education Computing Centre, Prissick Base, Marton Road, Middlesborough, TS4 3RZ, 0642 325417

DESCIT, Chatsworth Hall, Chesterfield Road, Matlock, DE4 3FN, 0629 580000 ext 6852

Education and Microtechnology Unit, Sandwell EDC, Oldbury, Warley, B69 4PJ, 021 544 2001, Fax: 021 511 1022

Education Information Technology Centre, West Park Curriculum Development Centre, Spen Lane, Leeds, LS16 5BE, 0532 782762, Fax: 0532 740811

Hampshire Microtechnology Centre, Connaught Lane, Paulsgrove, Portsmouth, PO6 4SJ, 0705 378266

Information Technology Service, Finstall Centre, Stoke Road, Bromsgrove, B60 3EN, 0527 574654, Fax: 0527 570261

IT Centre, Unit 9 Abbey Centre, Weedon Road, Aylesbury, HP19 3NS, 0296 392304

Kingston Schools IT Unit, Kingsdowne Centre, Ewell Road, Surbiton, KT6 6HL, 081 547 6847

Kingswood Centre, Barn Lane, Nr Albrighton, Wolverhampton, WV7 3AW, 0902 847000, Fax: 0902 845424

Northern College, Computer Education Dept, Hilton Place, Aberdeen, AB9 1FA, 0224 283500

Sandfield Centre, Sandfield Road, Lenton, Nottingham, NG7 1QH, 0602 418967

Stockport IT Curriculum Development Unit, Dialstone Centre, Lisburne Lane, Stockport, SK2 7LL, 061 474 2227

Trafford IT Centre, TVEI Resources Centre, Claremont Road, Sale, M33 1FE, 061 969 2606

West Glamorgan Centre for Computer Education, Elmwood Road, Baglan, Port Talbot, SA12 8TF, 0639 822656

Network Dealers

Oak Solutions network and information management systems are now well established in many schools and colleges. In order to provide a complete installation and support service we are working closely with a number of skilled and experienced dealers. Oak Network Dealers receive support and training from Oak Solutions so that they can provide you with all your network needs. If you are thinking of installing an Ethernet network and you want to know more about the added value of an Oak Solutions network system, call your nearest Oak Network Dealer now.

Authorised Oak Network Dealers

3SL Ltd, Brook House, 501 - 511 Crewe Road, Wheelock, Sandbach, Cheshire, CW11 0QX, Tel: 0270 761516, Fax:0270 768200

Cambridgeshire Software House, The Computer Centre, Unit 8, Bramley Road, St Ives, Cambridgeshire, PE17 4AY, Tel: 0480 467945

Daco Systems, 463 Warwick Road, Tyseley, Birmingham, B11 2JP, Tel: 021 706 8933, Tel: 021 706 4306

Lindis, Wood Farm, Linstead Magna, Halesworth, Suffolk, IP19 ODU, Tel: 098 685476, Fax: 098 685 460

Mansfield Computers, 33 Albert Street, Mansfield, Notts, NG18 1ED, Tel: 0623 631202, Fax: 0623 422968

Oak Solutions Product Guide and Prices

Oak Solutions have reviewed and simplified their price list for 1994. Software prices now include postage & packing. Please check P&P on hardware when ordering. (Software items shown in red, hardware shown in blue.) Site licences cost 4 times the single user price unless otherwise specified.

Genesis for Windows

£70 — *PC*

Multimedia authoring package for Windows. File compatible with Archimedes and Macintosh.

Genesis for Macintosh

£70 — *Mac*

Multimedia authoring package for Apple Mac. File compatible with Archimedes and PC.

Genesis Project

£50 — *Arc*

The new 'entry level' Genesis. Even more powerful than its predecessor Genesis Plus, yet much easier to use thanks to a new simplified user interface.

Genesis Professional

£120 — *Arc*

Genesis Professional starts where Genesis II left off. The de facto standard authoring package for the Archimedes. More powerful than before with a new easy-to-use user interface.

Genesis SDK

£800 — *Arc /PC/Mac*

The complete multimedia authoring bundle for the serious developer, including full cross-platform capability with licences to distribute applications produced using Genesis free of charge on all three platforms.

Genesis Upgrades

Limited period only

£35 Genesis/Genesis Plus to Genesis Project — *Arc*
£90 Genesis/Genesis Plus to Genesis Professional — *Arc*
£770 Genesis/Genesis Plus to Genesis SDK — *Arc*
£60 Genesis 2 to Genesis Professional — *Arc*
£740 Genesis 2 to Genesis SDK — *Arc*

Enquire for site licence upgrades.

Oak Draw for Windows™

£70 — *PC*

Drawing package similar in concept to Acorn's Draw on the Archimedes. Windows users can enjoy file compatibility with Archimedes Draw users.

Draw Print & Plot

£30 — *Arc*

Print drawfiles up to A0 on to many sheets of A4 with crop marks. Plot drawfiles to HPGL or Graphtec compatible plotters and to Roland CAMM series cutters and engravers.

Euclid

£50 — *Arc*

3D design tool. Effectively a 3D version of !Draw. De-facto standard Archimedes 3D application. Imports and extrudes drawfiles. Orthographic, isometric and perspective views.

Mogul

£25 — *Arc*

Animator for Euclid. Automatically moves cameras and objects in Euclid files to produce Ace Films.

Arclight

£45 — *Arc*

High speed ray tracer for Euclid and Mogul. Creates ray traced sprites or films of Euclid 3D images and Mogul animations.

Splice

£30 — *Arc*

Make animated films from sets of sprites, or edit existing Ace Films (as produced by Rephorm, Mogul, Tween etc).

Tween

£30 — *Arc*

Drawfile animation package. Calculates frames by 'inbetweening'. Films ideal for use with Genesis.

Rephorm

£50 *Arc*

Morph one sprite image into another, distort a single image or perform fades, wipes, flips and other special effects. Supports 15 and 24 bit sprites. Produces sprites, Ace Films and Acorn Replay files.

Kiddicad

£45 *Arc*

3D design editor for younger children. Build 3D designs from component kit of building bricks.

Oak Logic

£70 *Arc*

Design and test logic circuits on screen before building. Uses NOT, AND, OR, NAND, NOR & XOR gates.

Oak PCB

£70 *Arc*

Electronic design system for both printed circuit board (PCB) and schematic layouts. Supports up to 4 layer boards. Supplied with comprehensive libraries.

PDT

£150 *Arc*

Parametric Design Tool. The world's first interactive parametric CAD system. Ideal for mechanical engineers. Allows simulation of linkages and automatic editing.

WorraCad

£70 *Arc*

2D high precision desktop draughting package. Fully featured editor with comprehensive geometry facilities, automatic associative dimensioning to BS308. The fastest way to produce technical drawings on the Archimedes.

Design Processor

£900 (site) optionally payable in 3 annual instalments Arc

The revolutionary integrated design environment. Price includes site licences for 13 applications, vast amounts of resources and information, and 3 years of updates to the system. Areas currently covered include Food, Electronics, Environments and Packaging.

Ancient Egypt

£45 (site) *Arc/Mac/PC*

Multimedia application. Graphics and animation bring the world of ancient Egypt vividly to life.

IT in the Real World

£30 (site) *Arc*

Investigate the Applications and Effects of IT in real life situations. Key stage 3.

Battle of the Somme

£45/£90 with laser disc *Arc*

Using authentic film on Laserdisc, gives an unrivalled insight into the world of 1916.

Castle Life

£45 (site) *Arc/Mac/PC*

Investigate life in a medieval castle. Colourful screens with graphics and animation.

CD Français

£95 *Arc*

Over 50 interactive French activities using high quality CD sound. Based on the popular Tricolore course.

Cistercian Abbeys

£45 (site) *Arc*

Use graphics, plans, maps and a database to explore medieval monastic life. CD sound option.

Investigating Local Industry

£95 (site) *Arc*

Over 500 screens with many databases and timelines. An outstanding guide to the Industrial Revolution.

Letters

£45 (site) *Arc*

A delightful guide to recognising and writing the letters of the alphabet. Sound and animation throughout.

Primary Nature

£45 (site) *Arc*

Three multimedia applications, Hedgerows, Pond Life and Food Chains, for exploring the natural world.

Saxon Life

£45 (site) *Arc/Mac/PC*

Multimedia application with a wealth of detail on life in the Dark Ages. Suitable for Key Stage 2

Greeks

£45 (extra resources disc £15) *Arc*

Hampshire Microtechnology Centre's multimedia exploration of Greek civilisation for Key Stage 2

Viking Invaders

£45 (site) *Arc/Mac/PC*

Discover how Vikings lived, travelled and fought. Relates this far off time to the present day.

Ace Standard Printer Drivers

£15 (£40 site) *Arc*

Standard 8 bit printer drivers for a wide range of printers.

Ace ProDrivers

£35 (£80 site) *Arc*

24 bit printer drivers for RISCOS 3 (inc. HP500/550, Canon LBP, ESC P2). High quality colour output on colour printers. Monochrome printers can take advantage of background printing via spooler and colour separation facility.

Repro

£50 *Arc*

Printer palette editor to help you get the best from your colour printer.

ABC Version 3

£70 *Arc*

The Archimedes BASIC Compiler. Compiles BBC BASIC to produce fast efficient ARM code. Produces stand alone applications and relocatable modules. Library modules can be created to share code between applications.

Cambridge Pascal

£70 *Arc*

ISO standard Pascal compiler. Library support for RISC OS and Archimedes WIMP.

ClassPrint LD

£70 (site) *Arc*

Print to Computer Concepts LaserDirect printers over Econet or Ethernet networks.

Printer Spooler

£70 (site) *Arc*

Print to any printer over Econet or Ethernet networks.

ClassRom ADFS

£50 *Arc*

Hard disc partitioning, protection and management for A5000 IDE drives and 300/400 series ST506 drives. Also available as network slot card for 3020/4000 machines.

Econet/ClassRom

£85 *Arc*

Econet plus ClassRom card for network slot of A3020/A4000 machines. Allows connection to Econet network and provides full ClassRom facilities. Includes cable.

ClassNet Cards

£149 *Arc*

Ethernet networking for Acorn machines. AUN compatible ethernet cards with inbuilt client software for ClassShare application server and high speed ClassNet Protocols. Available as 16bit cards for 5000/540/400 and 300 series, 8 bit cards for 3000/3020 and 4000, and network slot cards for 3020/4000.

ClassNet/ClassRom Cards

£179 *Arc*

As ClassNet cards above but with inbuilt ClassRom facility for partitioning, protection and management of hard disc.

ClassNet/ClassRom/ClassShare Server card

£249 *Arc*

As ClassNet/ClassRom cards above, but with inbuilt ClassShare server software for high speed applications delivery to multiple machines.

OakTape Backup Software

£75 *Arc*

Comprehensive SCSI backup software for Archimedes filing systems including networks. Supports Archive DC600 and DAT drives, enquire for other devices.

SCSI Tape Streamers

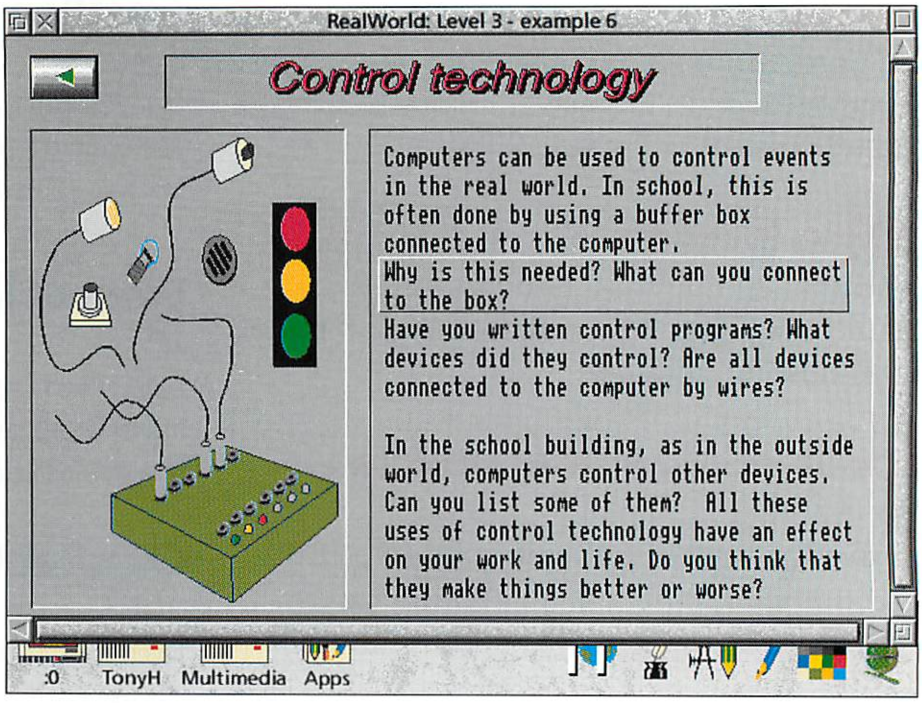
£Enquire *Arc*

150Mb DC600 0.25" tape streamer and 1Gb DAT drives. Supplied with OakTape software.

The National Curriculum requires that pupils gain understanding of all the five Strands of Information Technology by using IT where appropriate across the whole breadth of the curriculum. The Applications and Effects strand can be particularly difficult to accommodate. IT in the Real World aims to help pupils, teachers and parents to examine their understanding of IT in the world about us.

The application is designed to assist pupils to provide evidence of their IT capability at Levels 3 to 8. Pupils may be directed to work at the levels the teacher feels are appropriate or may decide for themselves which levels they wish to attempt, according to the policy of the school.

Having selected a level from the menu page, the user will come to a summary of the concepts to be addressed. At the same time, the icon bar will be revealed, so that access to disc drives and other applications is easier.



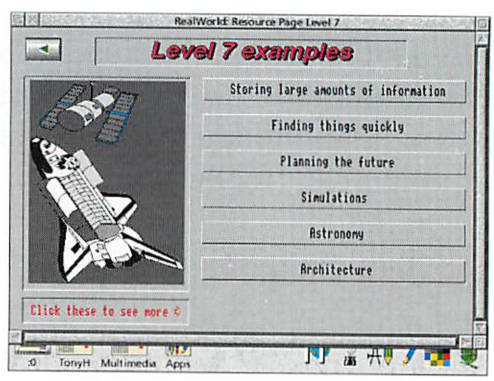
IT in the Real World

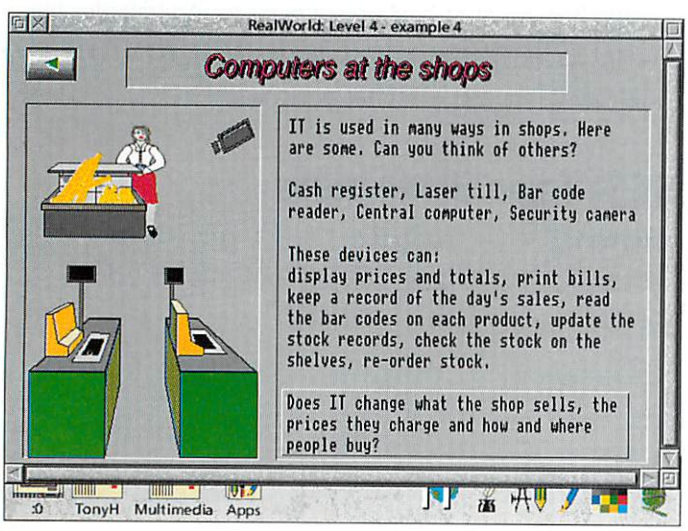
Teaching the Applications and Effects strand of IT at Key Stage 3

Clicking on any item will open a page giving information and posing questions. Hints about possible responses can be obtained by clicking on the "hot text" boxes which appear in the text on most pages.

The text explores briefly the main uses of IT in the area being studied. It also poses open ended questions, intended to promote discussion and research, and it is intended that the text on each page and on the smaller "ideas" pages should form the basis of the pupil's own writing.

Clicking the Menu button over a text area will produce a menu which allows the text to be saved direct to Edit or to a word processor. There is also an option to show the current floppy disc, so that work can be saved easily. In this way, children are helped through the difficult stage of beginning to write about their understanding and experience of IT.





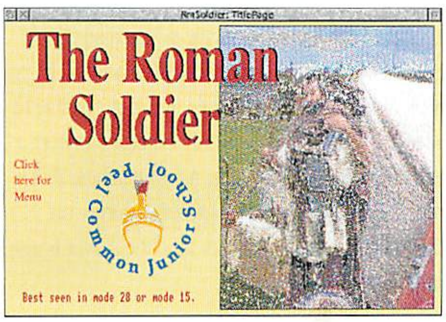
IT in the Real World was prepared in conjunction with the IT department of Netherhall School in Cambridge, which has gained a national reputation for the quality of its work with IT. The application is accompanied by a comprehensive set of information and work sheets, and provides a valuable resource for specialist and non-specialist staff as well as for children.

The IT in the Real World pack (application and worksheets) is available now from Oak Solutions, see page 6 for price details

Multimedia Horizons

"I believe that this is the finest example of schools using multimedia not only in Britain but in the world. I challenge anyone to prove me wrong."

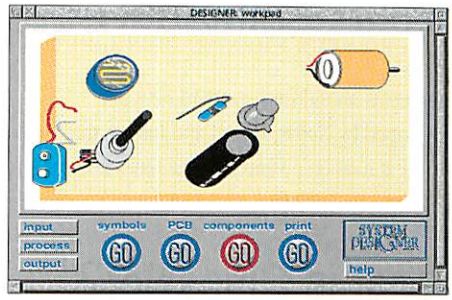
Martyn Wilson, IT inspector for Hampshire is not afraid to be controversial. But anyone who attended the launch of the Horizon Project in Basingstoke last November would agree that his claim is one to be taken seriously.



The Horizon Project is nothing less than a programme to make the children of Hampshire as literate in multimedia as they are in conventional terms. Martyn, and his predecessor Graham Bevis, have built an enviable team of advisory staff and have used this to promote the best use of IT in all schools throughout the county. They wanted to to bring the electronic communications techniques which are commonplace in the outside world into the classroom and discover whether teachers and children could create their own multimedia resources.

The Horizon Project was sponsored and supported by Acorn Computers. A software toolkit was assembled and all Hampshire schools were invited to participate. The authoring package chosen for all the Horizon projects was Genesis.

The 80 or more applications which have been produced are a tribute to the teachers and children of all ages and abilities who produced them, to the small team of teachers led by Tony Cox, which has provided support throughout, and to Acorn Computers. Oak Solutions is proud to have been associated with a project remarkable for the age range of those involved, for the number of people actively taking part and for the high quality of the final products.



Martyn's challenge remains unanswered so far. Is there anyone, anywhere, who has undertaken such an ambitious programme? If there is, they have much to be proud of and, like Hampshire, can consider themselves in the forefront of the multimedia revolution.

An illustrated handbook of the project and a guide to do-it-yourself multimedia can be obtained from Hampshire Microtechnology Centre (address on page 4).

Genesis Applications from Oak Regional Centres



Leeds EdIT Centre

Voyage

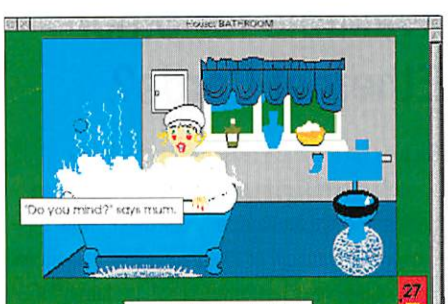
Voyage is an interactive application for pupils planning a visit to France or learning French. The user selects a destination and is presented with a number of activities which involve listening, reading, calculating and even speaking, if an Oak Recorder is attached. The activities are graded so that the application is accessible to a wide range of children.

Ingenious use is made of databases and spreadsheets and there are facilities for exporting the data from these into other applications.

Who Lives in this house?

This application is aimed at developing language and observation skills in young children. With an adult or with other children, the user explores the familiar environment of a house. Animations and sound make this application great fun to use.

Children are encouraged to find all the family, at which point extra pages are revealed.

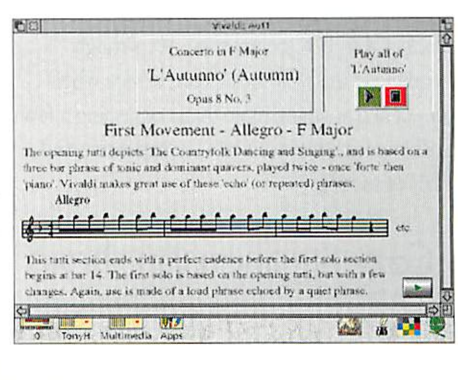


This is an application which parents and teachers of young children will find valuable and is a fine example of the effective use of IT from the earliest years of education.

Baglan Computer Centre

Vivaldi

This is the latest of a series aimed at GCSE music students. The application uses an EMI music CD, which is purchased separately (£5.99). The application is full of information about Vivaldi, his music and contemporaries, but concentrates on an analysis of "Autumn" from "The Four Seasons", which appears in this year's syllabus. When sections of the score are clicked on, the appropriate section of the music is played. There are also facilities to play each complete section.



ClassNet Questions & Answers

Gary Stephenson, head of Oak Solutions' networking department and author of Acorn AUN Level 4 answers some common questions

What is Ethernet?

Ethernet is an industry standard network developed by Xerox, Digital and Intel in the 1970's. It runs on a variety of machines and cable systems.

What is ClassNet?

ClassNet is the name of Oak Solution's Ethernet interfaces. They are available for all Acorn machines and offer a range of features designed specifically for use in Schools.

Why should I buy Oak Ethernet cards?

Oak has designed their Ethernet card to meet the needs of educational users. Low cost, lightweight protocols, hard disc protection and management, high performance, are just some of the features available with Oak cards. The system was designed in response to demands from our customers to provide the best networking system for Acorn computers. We have now achieved our goal. ClassNet is the result.

What different Ethernet cable systems are available?

There are four main types currently in use which are known as thick, thin, 10BaseT and fibre optic. All ClassNet interfaces have connectors for 'thin', and 16 bit cards also have an AUI connector for other cabling systems. A simple single room network can be set up using 'T" pieces and 'thin' Ethernet with BNC connectors. We strongly recommend that you seek expert advice when considering anything more than connecting a few machines - mistakes can be very expensive and time consuming.

What is AUN?

Acorn Universal Networking (AUN) is Acorn's networking strategy for the 1990's, founded upon the use of industry standards whenever appropriate. The first AUN product is Acorn Level 4 fileserver which was designed and developed by Oak Solutions. Many more AUN products are currently being developed.

Is ClassNet AUN compatible?

Yes it is. The current AUN software that is supplied with Acorn machines is also on the ClassNet card. AUN is an ongoing development and as such Oak Solutions will ontinue to develop the ClassNet system. In addition to AUN software, ClassNet cards can be configured in a variety of ways making for a very flexible approach to networking Acorn computers.

How fast is ClassNet?

ClassNet can load large data files from the ClassShare server at more than 1 Mbyte per second. The ClassShare server software is able to allow 20 machines to load Impression in under 10 seconds.

Will ClassNet be available for other Ethernet Cards?

There is no technical reason why this is not possible. Several manufacturers have shown an interest and we are currently discussing how they may take advantage of the unique features offered by the ClassNet/ClassRom/ClassShare family of products.

What options are available for Networking A3020/ A4000?

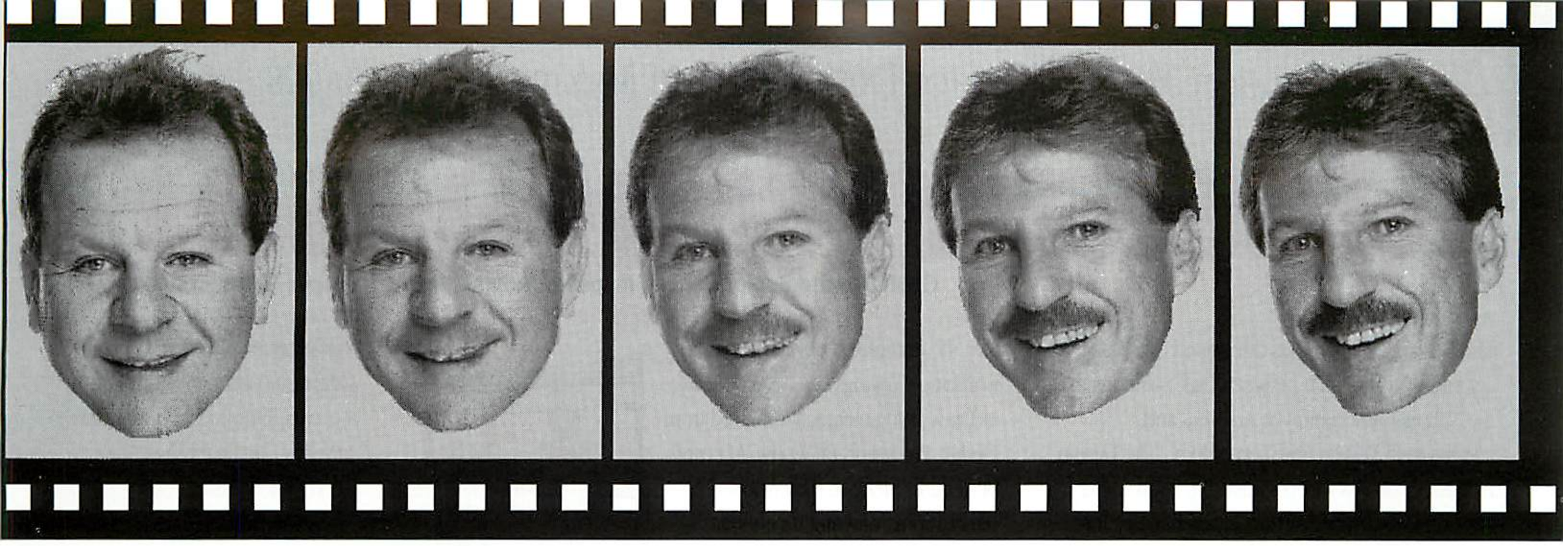
These machines have two internal expansion slots for network cards. One is specifically designed for special network cards only whilst the other will accept standard 'mini-podules' that will also fit inside the A3000.

Can Econet be connected to ClassNet?

The server machine can have both Econet and ClassNet interfaces thus allowing machines on Econet to see the same server as machines on Ethernet. An AUN gateway can also be used in more complex configurations. It is not possible to access a fileserver that is only on Ethernet from a BBC machine. However an Acorn machine that is running AUN software can access a server on Ethernet via an Acorn Gateway if the server is also running AUN software.

What is the difference between a Fileserver and an Application server?

The Level 4 fileserver was designed as a multi-purpose system to allow users to have private read/write areas for data, shared access to applications and resources. It also allows BBC micros and Archimedes machines to access the same central hard disc. Printer spooling is also catered for and management of the server is performed using desktop applications. The ClassShare application server is designed to provide a single read-only drive for applications and a private read/write drive (for scrap and temporary files) for all the client machines on the network. It is intended that users' work would be saved on floppy or to a Fileserver. The user is presented with a 'hard disc' icon so no logging on is required to run applications.

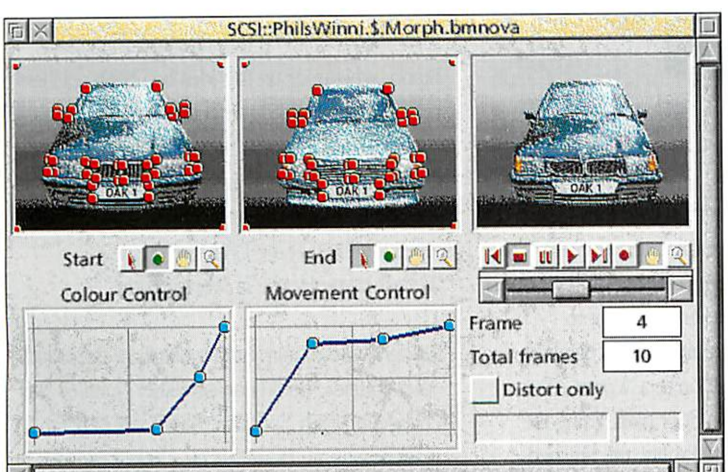


Rephorm

Morphing is all the rage in the film and advertising industries. With Rephorm, Oak Solutions bring high speed, professional quality morphing to the Archimedes.

Morphing is the very latest technique for processing images in order to create exciting effects. Many TV adverts you now see involve some sort of morphing; changing one person into another, fading cars to other cars etc. Such effects can now be created on your Archimedes with !Rephorm, the ultimate RISC OS morphing application.

!Rephorm takes two sprites of any size and allows a morph to be generated between them (alternatively a single source sprite can be distorted). You simply identify a number of key control points on the start sprite and reposition them to similar places on the end sprite. The time and rate at which the colour and movement changes take place can be controlled for individual points or groups of points by adjusting two graphs with the mouse. Rephorm calculates so quickly that the effects of repositioning control points can be seen in real time as you drag them! All calculations are performed in the background so Rephorm never stops the machine from multitasking.



Once all the points are set up, you tell !Rephorm how many intermediate frames you want to create and it does the rest. The morph can be displayed on screen, saved to disc as either an Ace Film or an Acorn Replay file, (!Projector and !ArmMovie supplied) or individual frames may be saved as sprites.

The user interface is been designed to comply 100% with Acorn's style guide, and to be simple, direct and intuitive to use. Rephorm can produce output at any size, and fully supports the new 15 and 24 bit per pixel sprites. This means that photographic quality is possible if you have suitable hardware. 15 bit sprites can be displayed with the colour cards such as the Computer Concepts Colour Card Gold. (Note that monochrome sprites have been used in this article purely due to limitations in the process used to produce Co-ordinate IT.)



The versatile nature of Rephorm's system of control points means that as well as producing morphs and distorted sprites, it can also be used to produce fades, wipes and other special effects. It ideally complements Acorn Replay editor systems.

Multiple morphs can be joined together (eg morphing from object one to object two and then from object two to object three) using the JoinFilms utility supplied with the package. Dragging an AceFilm into Rephorm's record dialogue box will cause the next film saved from Rephorm to take on the characteristics (size and screen mode) of the film dragged in. This allows accurate matching of films without having to worry about the numbers. More comprehensive editing facilities are available in the !Splice application which can be purchased separately.

Rephorm opens up new horizons of image manipulation in art, design and media studies - it's also a lot of fun!

Information Technology for Designing and Making at Key Stages 3 & 4

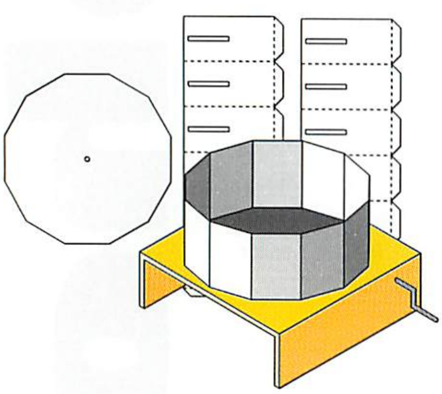
Design Processor

Geoff Howard Senior General Inspector/Adviser North Yorkshire County Council

The Design Processor has developed as a result of a working partnership between Oak Solutions and the National Association of Advisers and Inspectors in Design and Technology. The Design Processor concept has continued to evolve and now comprises three distinct layers of entry for maximum accessibility to pupils. At the first level, and underpinning everything is a suite of sophisticated CAD type packages and related applications.

At the heart of The Design Processor is the second level, a large Design and Technology database which can be used to inform pupils about components and processes and which provides a rich source of pre-drawn files which pupils can load into an application to give them a flying start. All files are fully editable and transferable to other common RISC OS applications.

The third layer of access is the most recent. The database concept has been extended to include not only components and design elements but also complete projects. These too can readily be adapted by pupils and transferred to !Draw for further editing.

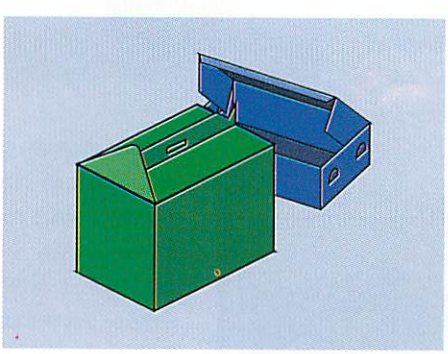


Using the Project route, pupils have retrieved the design of a simple Zoetrope from a database file and modified it to their own sizes. The net of the design was then plotted out directly on to good quality card using DrawPlot. The teacher had provided a pro-forma to help them design their own simple animations for homework and the following week the Zoetropes were spun by hand to test them. They might have used Draw or programs such as Tween to produce the animations.

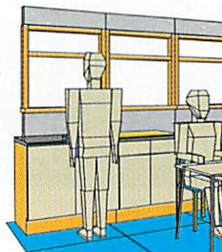
During the following lessons they designed and made bases for their Zoetropes out of sheet aluminium or acrylic and included a hand crank to turn the completed device. The final isometric drawings can be produced in Draw using elements captured from Design Processor, or WorraCAD can be used to produce dimensioned orthographic drawing if needed.

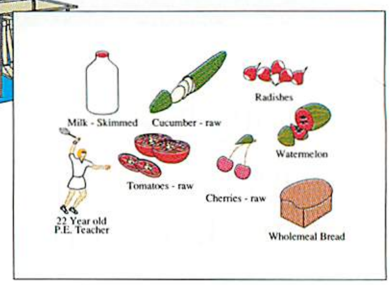
Year 9 pupils brought in packaging from a supermarket, opened them up and noted the nets used. They used Design Processor to help them design a package for a breakfast cereal which they had previously designed and made and some were now extending the work by designing and printing out some cut-out toys and games to go on the back of the packet using WorraCAD.

Building on this experience, a Year 9 group next year may use one of the many nets in Design Processor as a starting point for one of the SATs issued recently to schools. The 'Handled Box', for example, could easily be adapted to suit the requirements for a sports shoe package and the 'Fast Food Carton' could form the basis of a container in which food could be presented during plays or concerts. Using PDTView, the sizes could be altered and then the net could be transferred to !Draw to be further modified and have graphics added. The finished net would be plotted out full size on to card and also, full size, high quality colour print-outs of the labels produced. The whole package could then be assembled.



As part of the Year 10 common core for technology, pupils might explore the use of I.T. as a modelling tool by creating a design for their own kitchen at home using Design Processor to provide standard kitchen units from its database, which could be positioned on to a WorraCAD scale drawing of their own floor plan. Using the Design Processor Translate facility, the finished kitchen design is converted into 3D, viewed from different positions and under different light conditions and even a film produced to enable the user to 'fly through' their completed design.





Students taking the Graphics extension are able to use this to aid their visualisation and to print out different projections including perspective, isometric and orthographic. The print-outs are available in both wire frame and solid and could provide raw material on which pupils can develop their rendering skills.

Using the same intuitive techniques, Food extension pupils can explore the database to discover the effects of a range of menus which might be offered to specific people with particular dietary needs. The Packaging section helps all who wish to design and make products in any of the design and technology materials.

In North Yorkshire we are keen to promote the use of I.T. where the computer does not dominate or detract from the essential purpose of designing and making, but rather enhances it by empowering pupils and motivating them to make high quality outcomes, often comparable with commercially available products!

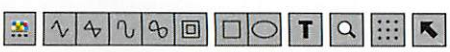
For 1994, we have devised a programme of in-service courses to be run at Grantley Hall near Ripon, which pursue this idea by giving teachers practical hands-on experience of the various software packages and projects mentioned. For the first time, we are opening up these courses to applicants from outside the county and also repeating them at the DATA centre at Wellesbourne House in Warwickshire.

Readers who require further details of these and other courses should contact either Grantley Hall College in North Yorkshire (0765 620259), DATA at Wellesbourne House (0789 470007) or Oak Solutions direct.

Oak Draw™ for Windows®

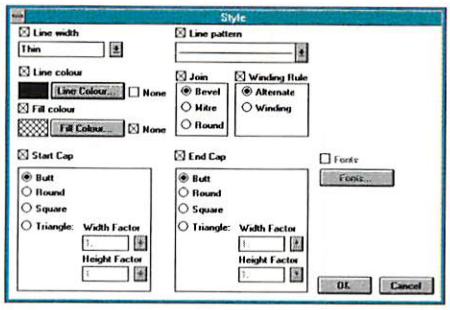
Why another vector drawing package? you might ask. The answer lies in the launch this month of Genesis for Macintosh. This application completes Oak Solutions' plans to provide a multimedia authoring system working across the three major platforms - Acorn, PC and Mac.

Essential to this strategy is the ability to transfer files between formats. Acorn's Draw application is certainly the most widely used graphics package throughout the world of Acorn computers, and it seemed highly advantageous to have an application capable of creating and editing Drawfiles on the PC. Oak Draw for Windows does all this and more. Graphics can now be created on Acorn or PC and transferred freely between the two platforms. Use a DOS 720K formatted floppy disc for the transfer. DOS discs can also be read by the Mac for transfer of drawfiles into Genesis for Mac.



The program is icon driven, with a tool bar displayed across the top of the work area. The tools are :

Edit Style, Open Straight Path, Open, Closed Straight Path, Closed Curved Path, Curved Path, New Subpath, Rectangle, Circle/Ellipse, Text, Zoom, Grid and Select. Most of these tools have been designed to have a similar "look and feel" to



Acorn's Draw. Help on any tool is available by pressing Shift/F1. The mouse pointer becomes an arrow with a question mark. Clicking on any of the tool icons now brings up the appropriate Windows Help file.

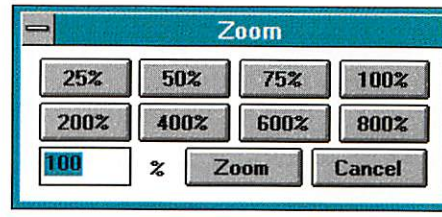
The tools which show the most obvious differences are the Edit Style, Zoom and Grid options. Clicking on each of these opens a dialogue box.

The Zoom dialogue box allows the selection of a number of predefined magnifications, or for the user to enter a value.

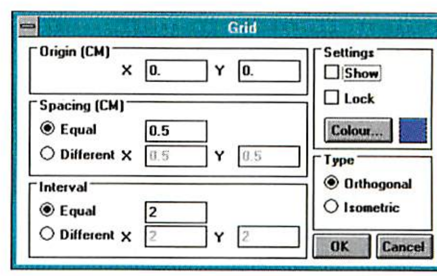
The Grid tool, as well as offering Show and Lock options allows the user to specify the origin, spacing, interval and colour of the grid, as well as choosing between orthogonal and isometric.

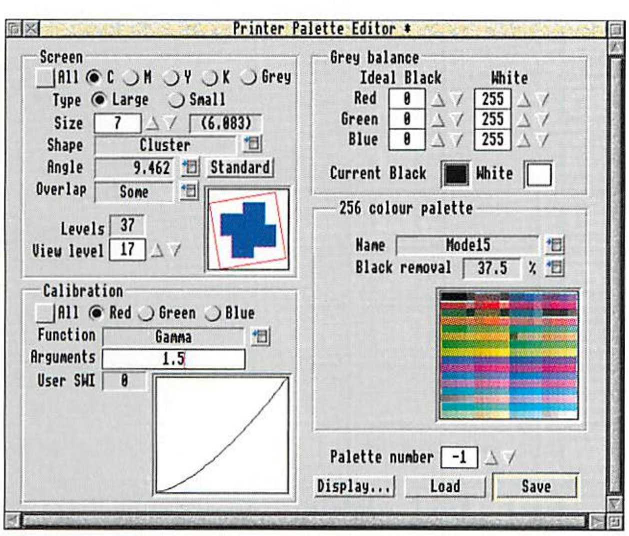
The Edit Style dialogue box offers the ability to set line and fill colour as well as defining line width, pattern, join style, start and end cap styles and the winding rule. Where appropriate font size, style and colour can be selected from a sub menu.

The comprehensive manual is released in a ring binder, so that as extra tools are added to Oak Draw, supplements to it can be inserted.



Oak Draw is already a powerful and flexible vector graphics package for any PC user. It is also the first step towards Oak Solutions' policy of true hardware independent multimedia software. For anyone planning to transfer work between the major platforms, this one is a must!





Get the best out of your printer with

Repro

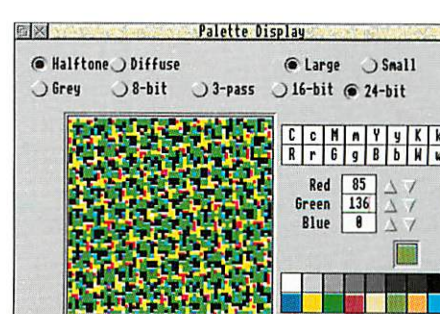
!Repro is being launched to correspond with the imminent release of a new set of printer drivers from Acorn. This professional tool allows you to manipulate the exact translation of colours from screen to paper, in order to get the best out of your printer.

You now have complete control over screen size, screen angles, gamma correction, grey balance and black removal.

Multiple palettes can be defined, so that different source material can use the best combination for the best result.

You can even use the system to generate interesting special effects: e.g. truncation to primary colours, colour separations and very large halftones.

Repro has been developed in association with Acorn, using the expertise which has been used in the past to develop the most comprehensive range of Standard and PRO drivers in the market.



Oak Solutions and the Curriculum

	English	Modern Languages	Geography	History	Mathematics	Technology	Science	Art	Music	Key Stage
CAD										
Oak Draw for Windows	■	■	■	■	■	■	■	■	■	All
Design Processor	■				■	■	■	■	■	3/4+
Parametric Design Tool					■	■	■	■		3/4+
WorraCAD					■	■		■		3/4+
KiddiCAD					■	■		■		2/3
Oak PCB						■	■			3/4+
Oak Logic					■	■	■			3/4
ANIMATION										
Rephorm						■		■		All
Euclid					■	■	■	■		3/4+
Mogul					■	■	■	■		3/4+
Splice					■	■	■	■		3/4+
Tween					■	■	■	■		2/4+
Arclight					■	■	■	■		3/4+
MULTIMEDIA AUTHORING										
The Genesis family	■	■	■	■	■	■	■	■	■	All
GENESIS APPLICATIONS										
CD Français		■				■				3/4
Ancient Egypt	■			■		■		■		2/3
Saxon Life	■			■		■		■		2/3
Viking Invaders	■			■		■		■		2/3
Castle Life	■			■		■		■		3/4
Cistercian Abbeys	■		■	■		■		■	■	3/4
Investigating Local Industry	■		■	■	■	■	■			3/4+
Battle of the Somme	■		■	■		■			■	3/4+
Primary Nature Pack	■		■		■	■	■	■		2/3
Letters	■					■		■		1/2
IT in the Real World	■	■	■	■	■	■	■	■	■	3

OAK SOLUTIONS

ARM3 upgrade with floating point accelerator (FPA) option £139

ARM3+FPA fitted and tested £199

The ARM3 upgrade increases the speed of your computer by a factor of 3 (typically), and sometimes even more. Acorn's new floating point chip, the FPA 10, speeds up maths operations previously emulated by software.

A 68-pin socket is provided on the ARM3 board, and the FPA chip can simply be plugged in at any time.

The upgrade uses a high quality 4-layer circuit board. It may be fitted to the A305, A310, A440, 400/1 series and the A3000. Installation is straightforward for the 300 and 400 series computers. A 3-day fitting service is available if required. Please note that the A300 series and old A440 require the MEMC1a upgrade.

25MHz ARM3 – **£139**
MEMC1a – **£25** Floating point chip – **£99**
ARM3 with FPA fitted – **£199**

35MHz ARM3 – only £139

We still have limited stocks of these ultra-fast ARM3 upgrades. Some of the most popular Archimedes applications (such as Impression, Artworks and even BASIC V) do not gain anything from the FPA10. So, for those using Impression or Artworks extensively, the 35MHz upgrade is the only logical choice. Please write or phone for full details.

Our usual money-back guarantee applies to all ARM3 upgrades.

A3000 memory – 4Mb £99

An easy to fit and reliable RAM upgrade. Gold plated connectors ensure long term reliability. This upgrade uses a four-layer circuit board as recommended by Acorn. No soldering needed.

2Mb RAM board (upgradable to 4Mb) – **£50**
4Mb RAM – **£99**
Bare board (without RAM chips) – **£25**
2Mb to 4Mb upgrade – **£63**

A3010/A3020/A4000 RAM

These machines may all be upgraded by easy to fit, plug-in components. No soldering is required.

A3020/A4000 extra 2Mb – **£58**
A3010 extra 1Mb (2Mb total) – **£35**
A3010 upgrade to 4Mb – **£125**

All products fully guaranteed. Many products also carry our 14-day money-back guarantee too. Please phone for details.

This month's specials

4Mb RAM for A310	£119
2Mb RAM for A310	£75
2Mb RAM for A5000	£69
Impression II	£115
Artworks	£120

RISC OS 3

Acorn's new operating system for their range of RISC computers. The old version of RISC OS (2.00) is just 512K long, whereas OS 3 contains 2Mb of code. Many applications which were previously supplied on disk are now contained in the OS ROMs. These include improved versions of Draw, Paint and Edit. Because they are available on ROM they are always instantly accessible, and also occupy less RAM space.

Other features include extra "background" operations. For example, disks can now be formatted or files copied while the machine is used for other purposes.

RISC OS 3 may be used on the A305, A310, A440, 400/1 series, A3000, A540 etc.

RISC OS 3 **£75**
A305, A310 and A440 owners please note. You will need to install the RISC OS Carrier Board in order to use RISC OS 3. The RCB may be used with any version of RISC OS, The carrier board is compatible with memory boards, ARM3 upgrades and does not in any way obstruct expansion cards ("podules").

RISC OS Carrier Board **£18**

A5000 systems & memory

A5000 with RISC OS 3, 80Mb hard disk, multisync monitor and ARM3 – **£1399**
A5000 learning curve – **£1445**
Free 4Mb RAM upgrade included in the price.

2Mb memory board (4Mb total) – **£75**
A compact board measuring just 104mm by 49mm, this design fits vertically in your machine. No soldering required. Unlike larger boards, there is no need to remove the disk drive. Four-layer design as specified by Acorn. A bare board (ie without the RAM chips fitted) is also available.

Hard disk upgrades

A range of fast SCSI or IDE internal hard disks with a year's warranty, in sizes from 40Mb upwards. Complete systems supplied with all metalwork and cables. 400/1 machines merely require the drive and controller card, 300 series require a backplane.

40Mb SCSI – **£180** 85Mb SCSI – **£210**
120Mb SCSI – **£250** 210Mb SCSI – **£320**
Fast 16 bit SCSI card – **£100**
50Mb IDE – **£160** 120Mb IDE – **£250**
IDE controller card – **£75**
(add £75 for external version of SCSI disks)

Various

Aleph One 386 1Mb PC Card – **£390 (4Mb £475)**
Aleph One 486 1Mb PC Card – **£490 (4Mb £575)**

Free price list available upon request. Prices exclude VAT.

A300 series upgrade column. 2Mb £89, 4Mb £128

Memory expansion

Extra memory is without doubt the most worthwhile addition to any A300 series machine. Some programs won't even run with only 1Mb, and 2Mb is a bare minimum. Certain applications, desktop publishing for example, benefit from a 4Mb system.

1Mb to 2Mb – £75 **1Mb to 4Mb – £128**

Upgrade from 2Mb to 4Mb (self fit) **£65**

Compatibility. The memory is detected and used by the machine automatically, so there are no special commands needed. Works with both RISC OS 2 and RISC OS 3.

Fully compatible with ARM3 upgrades, backplanes, hard disks etc. This upgrade is supplied on just one compact board measuring only 195mm by 46mm. Four-layer circuitry reduces electrical noise for trouble-free operation. The 2Mb upgrade may be upgraded to 4Mb later by the user, without any soldering. A copy of the fitting instructions is available free of charge.

A complete fitting service is available for our RAM boards covering courier collection, installation and testing, MEMC1a, return delivery and guarantee. This is normally a three-day service (eg. collected Monday, returned Wednesday). We have been upgrading 300 series computers for nearly four years, and during that time a reliability record second-to-none has been established.

Is there any other 300 series RAM upgrade which has been available for as long as this one, and which has the same reputation for quality and reliability? No.

Still not sure? Compare it with the competition before making up your mind. Use our 14-day money-back guarantee to check it out for yourself.

RISC OS Carrier Board **£18**
This is an easy to install adaptor board for the larger RISC OS 3 ROMs. A set of links on the board allows it to be used with RISC OS 2 and easily adapted for RISC OS 3 later. Suitable for use with the A305, A310 and A440. The adaptor has been fully tested with RISC OS version 2 and version 3. It is fully compatible with other hardware upgrades such as the RAM board described above, ARM3's, backplanes, VIDC enhancers and expansion cards.

4-slot backplane with fan **£53**

Combination deals

4Mb with MEMC1a, self fit **£143**

Collection of your computer, installation of 4Mb of RAM, MEC1a and RISC OS Carrier Board, testing, full guarantee and return delivery **£189**

As above, but with 2Mb of RAM **£135**

(Add £70 to have RISC OS 3 fitted at the same time)

RAM for 410 & 420

Upgrade from 1Mb to 2Mb – **£33**
Upgrade from 2Mb to 4Mb – **£65**
Upgrade from 1Mb to 4Mb – **£98**
Supplied with full instructions

IFEL Ltd **Educational and quantity discount available**
34 Culver Road, Saltash, Cornwall PL12 4DR. Tel (0752) 847286 *Fax (0752) 840029*

Compose Yourself

Richard Hallas looks into the next century with an application which is revolutionising the music printing industry

Music typesetting is a highly complex and skilled art. Traditional engravers follow hundreds of very subtle rules which govern everything from the size and style of typeface used for any particular kind of text, to the precise angle and position of beams joining groups of quavers or shorter notes. In terms of complexity, laying out a page of text is child's play compared with laying out a page of music.

The sheer complexity of the task is the reason that music typesetting programs have generally not been very successful: few programs could cope with every kind of musical situation. However, after five years of development, a new contender has appeared which is set to change all that; and it runs on Acorn machines.

Into the future

Sibelius 7 is the program which has astounded music publishers and engravers. It is an 'expert system' and knows all the rules of music typesetting, automatically applying them as you enter the notes.

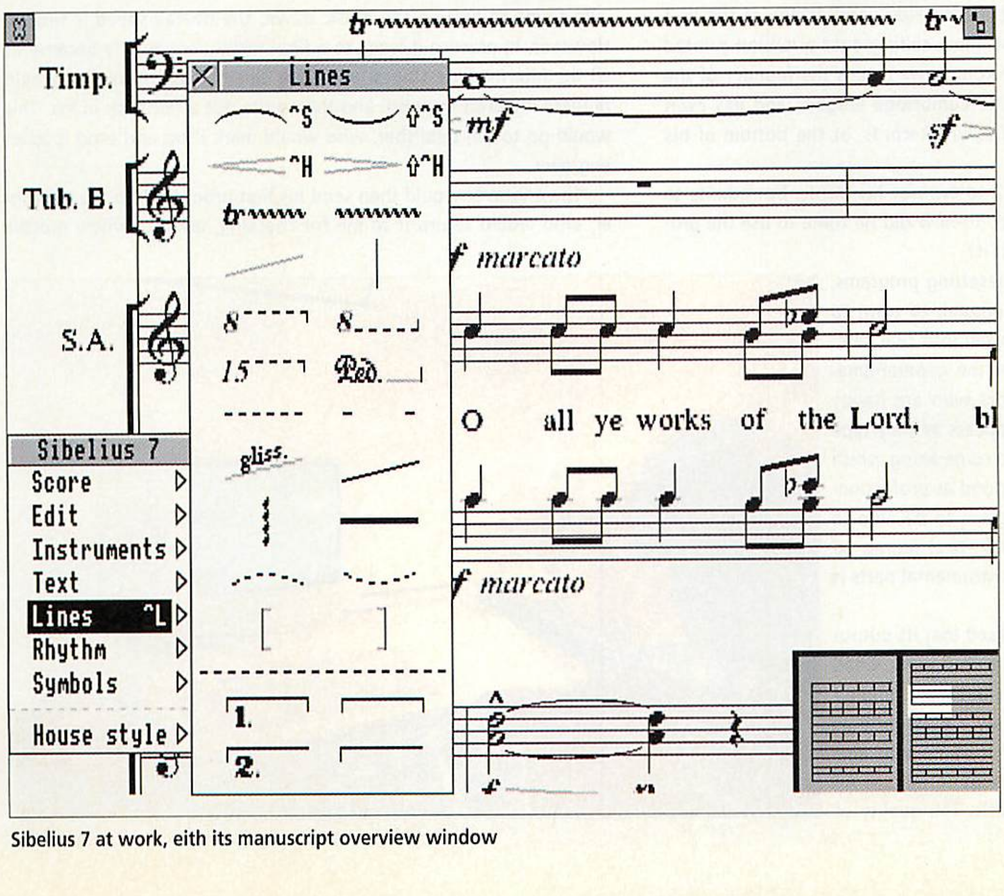
Whilst *Sibelius 7* has in fact been available to professionals for some time, a slimmed-down version called *Sibelius 6* has just been released for home and educational use. Although not as comprehensive as the professional version, *Sibelius 6* contains all but the most specialised features and symbols of its counterpart, but in a generally limited form. On the other hand, printouts from the two versions are indistinguishable from one another, which really does mean that home users can have just the same tools as the professionals.

Double-clicking on the icon installs the program on the icon bar as normal. However, whilst editing a score *Sibelius* takes over the whole screen, although it does still multi-task and will let you return to the desktop as you left it.

The reason for this approach is quite simply speed: *Sibelius* is the fastest program you are ever likely to see on your Acorn. You can click on an empty part of the score and drag the page, and it slides around the screen as fast as you can move the mouse. It's impossible to see any part of the screen redrawing at any time.

This speed is not limited to the drawing of the screen. Because *Sibelius* is an expert system it applies the rules all the time, even if you do something as trivial as adding a sharp to a note. In fact, when you make any alteration whatsoever to the score, *Sibelius* reformats the whole thing.

This sounds potentially slow, but in fact it takes about a tenth of a second, regardless of the length of your score. *Sibelius* is so flexible that you can, for example, change the score from portrait A4 to landscape A3 (*Sibelius 6* only lets you use A4), perhaps altering the size of staves at the same time, and as soon as you click OK the job is done instantaneously.



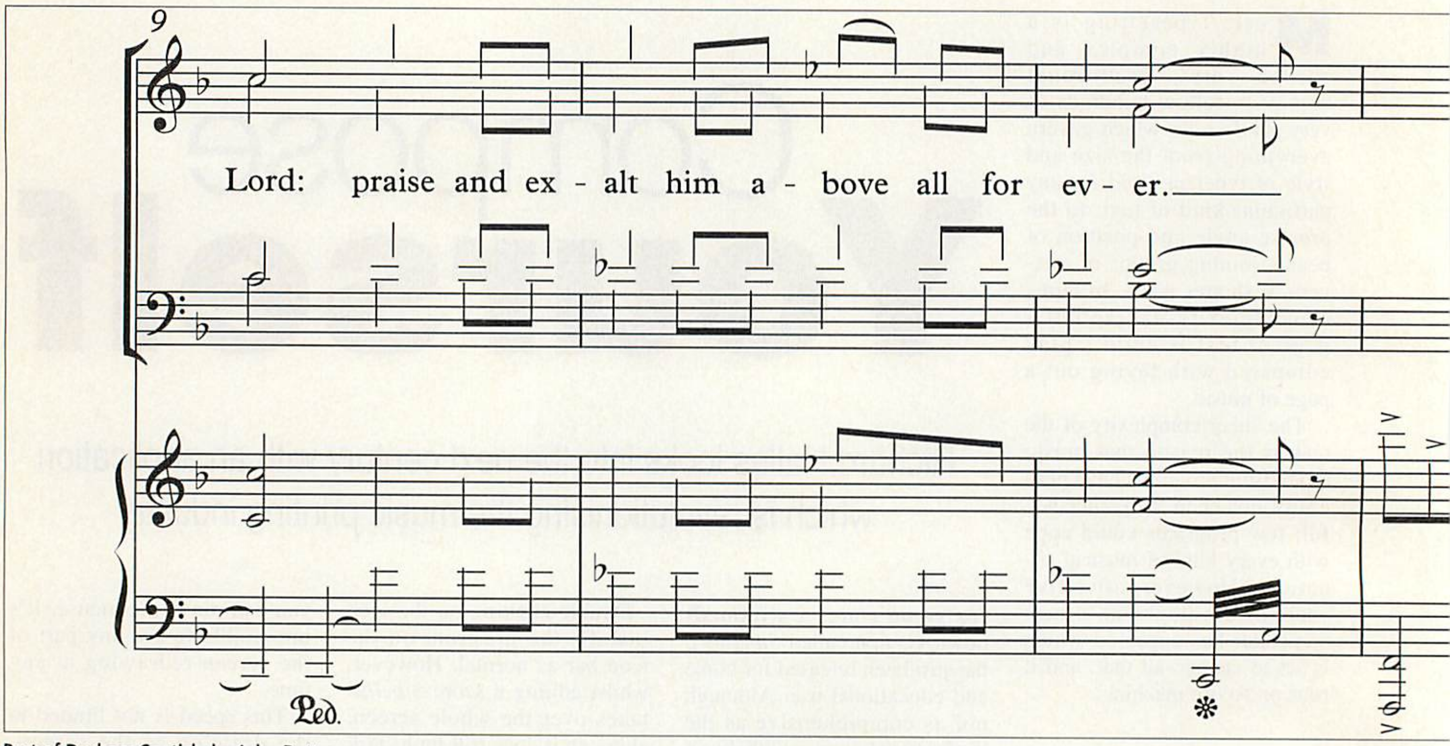
Sibelius 7 at work, eith its manuscript overview window

Editing

Although the screen shows only a portion of the page at once, a 'radar' at the bottom right shows an overview of two facing pages, and you can use it to move around the score quickly.

You are presented initially with a completely blank page, but choosing an instrument from a menu places a stave containing five bars' rest on the page, complete with appropriate instrument title. Almost every conceivable instrument is available from the menu, but if you need something really specialised, *Sibelius 7* will let you create it manually.

Once the bars are on the



Part of Durham Canticle by John Rutter

The first major change for composers in a thousand

John Rutter is a professional composer and conductor of international repute, whose large and varied output encompasses many genres from choral music to orchestral and stage works. His music is instantly appealing and very approachable, and his popularity can be judged by the fact that he is reputedly the highest selling classical composer in the United States. A Christmas never goes by without countless performances of his hugely popular carols, and his 'Shepherd's Pipe Carol' is one of the best selling classical compositions of all time, selling over a million printed copies and receiving numerous recordings. He is also the founder of the highly acclaimed chamber choir, the Cambridge Singers, and has even established a record company, Collegium Records, at the bottom of his garden.

John Rutter now uses *Sibelius 7* to typeset his music, but admits to being 'not highly computer literate'. So how did he come to use the program, and what does he think about it?

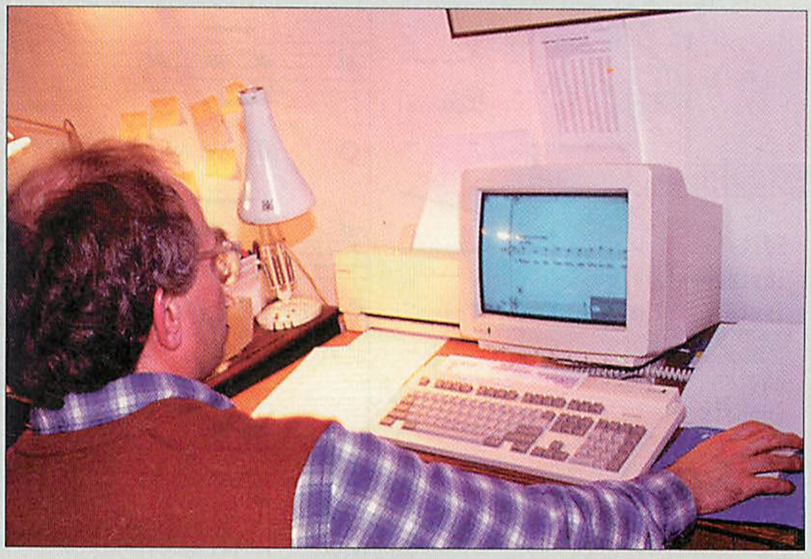
'I've looked at various music typesetting programs, but have never found them good enough to want to invest in one myself. They seem to fall into two categories: they are intended for either the general amateur user or for computer operators who are happy about not seeing how the music appears as they type it in. I was waiting for something to come along which was both easy to use and looks as good as professional print, and I also wanted a program to be able to extract instrumental parts from orchestral scores, so that the major job of copying out instrumental parts is completely eliminated.

Once I had bought *Sibelius*, I realised that its output is just as good as professionally engraved work. I had found that slurs in most computer programs looked rather inelegant, but in *Sibelius* they are as good as those done by hand with a French curve. I was also impressed by its ability to use any page format, as A4 is simply not a standard size in music. The quality of the output caused me to wonder if I could go the final step of saying that what I tap in on the keyboard is actually used directly by my publisher. That's what the authors and I have been working towards'

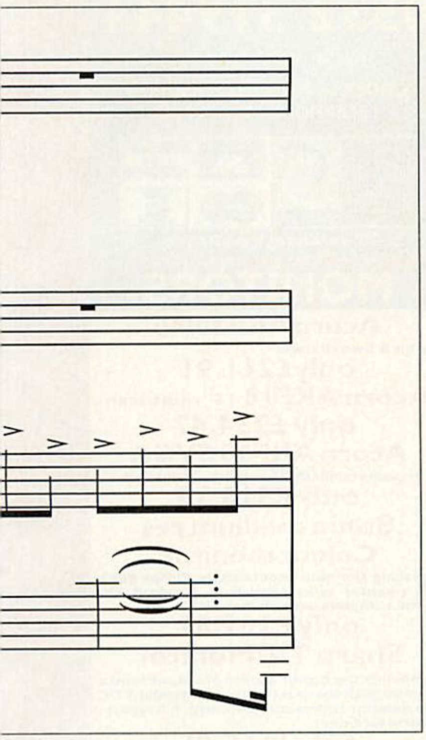
If using *Sibelius* removes the need to make a fair copy of his draft scores, how does the process of notating the music using the computer compare with writing it out by hand?

'In terms of getting the music down, the overall speed is similar. However, in practice it leads to a final result very quickly because of all the intermediate stages which are eliminated. Previously I would prepare my draft in pencil and then write out a fair copy in ink. This would go to the publisher, who would mark it up and send it to an engraver.

'The engraver would then send his first proof back to the publisher, who would return it to me for checking, and the whole process



BEN FINN



page, you simply click on a bar rest and press a function key to turn the rest into a note, and from then on it's simply a case of placing notes, chords, text and symbols and dragging them about. Although the way it all works is a bit unusual compared with other Risc OS applications, it's very easy to learn.

As you edit the music, *Sibelius* redistributes bars round the lines and pages just like a word processor handles words. *Sibelius* understands how all the symbols work, so it can move and stretch them as it justifies everything over the page. Every conceivable symbol is provided, including esoteric ones for avant-garde music. Everything works instantly, even the extraction and transposition of instrumental parts.

Limitations

In the version of *Sibelius 7* I saw (*Sibelius 6* wasn't quite finalised at the time of writing), text is limited to a number of preset styles to enforce consistency, and only whole bars of music can be copied, rather than arbitrary note groups. Also, the editing screen has some compromises to make it fast: for example, it only shows one generic font family (but a desktop overview window gives you a full WYSIWYG preview of each page).

However, the authors are tackling all these points, and by the time you read this *Sibelius* should have user-defined text styles like *Impression*, and editing and the screen display will improve too. *Sibelius* will also be able to input music via MIDI, and will be able to play it back using MIDI or the internal speaker.

Conclusions

All the most important music publishers are beginning to make use of the *Sibelius* system, including the world's largest music publisher, Music Sales, along with other well-known names like Faber Music, Peters Edition and Oxford University Press. Chris Hinkins, a top music engraver who has twice won an award for graphic excellence, has called *Sibelius* 'by far the best music processing system in the world'. *Sibelius* is being used to process many important new works, such as Lutoslawski's 4th Symphony, recently premièred in the 1993 BBC Proms. These facts speak for themselves.

It is remarkable that this quality of program is available for as little as £160. Now, fully professional quality music printing is easily within the reach of schools and individuals. *Sibelius* is quite possibly the most impressive program of any kind I have ever seen, and the speed at which it works is simply staggering. Although the screen display in full editing mode is not quite as flexible or truly WYSIWYG as other desktop applications, it is being improved all the time and should be of no concern to any serious user.

If you have any need to print music, you simply have to buy this program. No other system combines such ease of use with such quality. What's more, the manual is very well written and highly instructive. *Sibelius* is almost certainly the most influential application ever to appear on Acorn machines, and could have very far-reaching consequences.

years – John Rutter

would be repeated, taking from six to twelve months. By using a program such as *Sibelius*, where the manuscript I submit on disc to the publisher is the finished product, a process which normally takes months can be completed in a couple of weeks. I can also take responsibility for the appearance of the finished work.

'This is one of the most extraordinary developments you can imagine, because really there has been no substantial change in the way that composers put their music on paper for a thousand years! To now move into the situation where once the first pencil draft is done there is no fair copy but you can just go to the finished product is an extraordinary development.

'Something that has never been possible before is to compare the same page of the same piece of music in ten different typefaces. It's like wine tasting! Such points sound trivial, but they are not. It's important to remember that music often has to be read in a bad light, so good legibility is vital."

So how easy is Sibelius to use?

'I started to make use of the system last August, and I was very pleased that on day one I was able to input ordinary, if not hugely, complex pieces and see them look good. I would say that within ten days I regarded myself as having become pretty fluent. Like driving, I now feel I don't have to think about it.

'If you don't like what *Sibelius* has done automatically you can always override it manually, and this is vital. Whilst it will get something down quite quickly which is legible, if you're willing to take that bit of extra trouble, *Sibelius* will respond to that and will produce something with an appearance which is good enough to take straight to print.

The availability of the authors is also an important factor. Quite a number of features which have been on my wish-list have been incorporated. Although I am not an avant-garde composer, it is good that the same system is capable of dealing with the whole gamut of notational features wanted both by these composers and by editors of early music. I really am a convert: it's nice to be in at the beginning of all of this.'

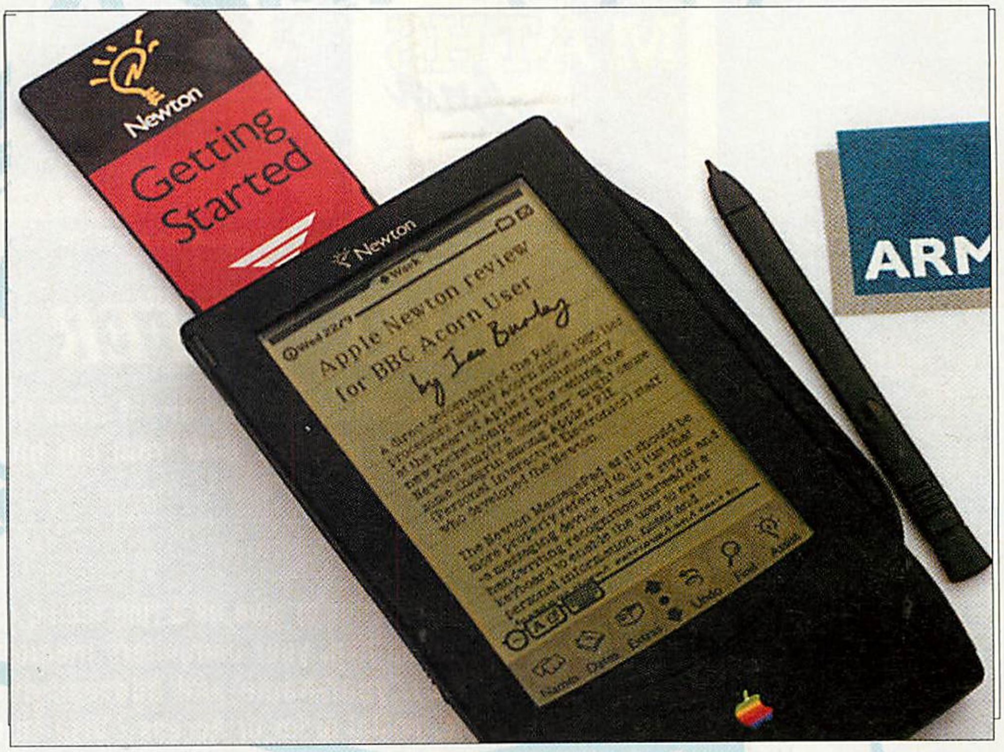
Product details

Products: Sibelius 6, Sibelius 7
Supplier: Sibelius Software
Tel: (0223) 302765
Price: Sibelius 6, £160 + VAT; Sibelius 7, £760+ VAT, educational price £499 , other discounts available

Major differences between Sibelius 6 and 7

	Sibelius 6	Sibelius 7
Score length	512 bars	Unlimited
Staves per page	32	128
Stave sizes	5	Arbitrary
Page size	A4	Any up to 999 mm
Scaled printing	100%	10%-999%
Clefs	9	16
Tuplet range	2-6	2-63
Text styles	Defaults	Definable
Overall appearance of score	Fixed	Highly definable
Part extraction	Single instrument	Multiple instruments
EPS file export	No	Yes

NEWTON NOT SO NEAT



Having read the review of the Apple Newton in Acorn User, I must conclude that the Newton is dead in the water. 70% recognition after a week's use is frankly disastrous!

Even with OCR, a 98-99% recognition rate is an absolute minimum to be even approaching usefulness. Whatever clever gimmicks the Newton may have to 'Fax Bill' once it has found his fax number, they are rendered quite useless if it has to take half an hour to recognise 'Bill' in the first place, having doubtless tried Will, Mill, Till, Gill, Jim and so on.

My heart does not bleed much for Apple, but I am far more concerned for Arm Ltd who, through no fault of their own, may be associated with the failure of the software.

P Foster
Cambridge

I don't think we need worry about Arm Ltd. The software is responsible for the OCR, and I don't think anyone would question the speed of the Newton. It's a bit like blaming Acorn for dodgy third-party software.

BACK TO BUSINESS

I regret that your reply to P Robertson's letter in December's Acorn User was neither encouraging nor helpful. As a small business user of an Acorn I can well understand Mr Robertson's frustration.

Whether file transfer is a problem or not will very much depend on the nature of the business and its starting point. There are file transfer procedures and software for many file systems, if you can find them.

The difficulties I encountered were very much more related to a substantial lack of quality control and inadequate backup. In nine months' usage I have had replacements for the printer, monitor and keyboard. Acorn printer drivers failed to work with *Ovation*. The manuals are well written only in part, and in general are clearly incomplete and not well organised. Certain procedures lock the machine up and others create error messages like confetti.

The quality of retailers, hardware and software houses varies from truly excellent (nothing but praise) to downright awful (why bother). Also, there is too much hype of products with subsequent failure to deliver a finished product on time.

The positive side is that now my Acorn performs as it should do, using Ovation (exemplary manual), Thesaurus, Vector, TableMate and a host of other invaluable applications; it is a powerful, very fast and intuitive computer, and has a very pleasing desktop environment.

Would I buy another Acorn for business? I cannot tell you. The downside really stopped me dead several times – far too many, really – but the Acorn is a brilliant concept and is entirely suitable for business. So, Acorn, it all depends on you.

B Bailey
Gloucestershire

And the third party software houses. I think the above point about support is vital to this argument, and despite David Bell's optimistic comments in the December issue, I think that support needs to be improved. It's no use blaming Acorn: that's a bit like blaming Apple for bugs in *Quark*.

David mentioned one possible way forward which I think would solve the problem: paying for support beyond a certain level. The initial reaction of most people is that support should be included in the price of a product, but at the prices being charged for high quality software and hardware, how much support can you realistically expect?

It's a tricky subject, but having been involved in supporting Acorn-based products, I sympathise with the developers. We all want better support, but with the present situation, we may be expecting too much for too little. Would you pay for extra support?

BACK TO BASICS

Ever since I took up computing as a hobby 13 years ago my chief interest has been in the language Basic and how it can be used in programming. Your new series Back to Basics is a sure-fire winner with me. It's elementary at the moment, but I look forward to each new month's instalment with great interest.

It is interesting to see the difference that constructs like CASE-ENDCASE and WHILE-ENDWHILE make to the running of a program – they were not available to me until I bought my A5000. I hope you keep this series going for a very long time, as it would seem to me to be the very essence of home computing.

D McRae
Kirkcudbright

Oh, it's so wonderful to be appreciated. Still, all is not entirely satisfactory in the Acorn camp...

Drop us a line at Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield SK10 4NP

GAME SHOW

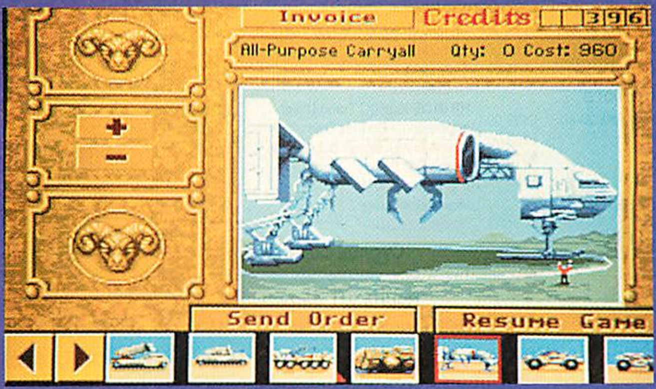
Now that we're shot of Christmas for another 12 months, it's time to take a peek at what's in store for the new year.

It's 1994 which, to footie fans, means just one thing: the World Cup. This year, of course, it will seem a little odd, thanks to Graham 'Turnip' Taylor, because England won't get a look in, let alone a kick.

The nearest we'll get to competing in the USA is switching off the telly and turning on the computer, especially because there's going to be a small avalanche of football games released this year. It'll be interesting to see if any of them have England on the team lists. We're not bitter of course. Aaargh!

Dune 2, Acorn won

OK, so we never had *Dune 1*, but the Amiga world did and they didn't like it, so who cares? *Dune 2*, on the other hand, has been raved about and we're getting it soon.



Dune: Read the book, play the game

A kind of arcade strategy game, it has been described as 'Sim City with heavy artillery'. It's about a spice called Melange that is abundant on the planet Dune, and the people who are fighting over it.

The galaxy is fed up with the squabbling so the Emperor sets a little challenge: whoever produces the most spice from Dune can control the whole planet.

The best way to go about winning this is to start building a base somewhere on Dune, then set up a mine and spend some money fortifying your base with military weapons and vehicles to make sure your mine is well defended from attack. This way you can continue to reap profits from selling your Melange and are able to pay for the battles you're going to have to win against everyone else.

It sounds excellent fun but apparently things can get very complicated at times. *Dune 2* is being converted for Virgin by Gamesware and will be out by Easter.

Sam Greenhill

Cheats

Pandora's Box: Too slow! Now the long dreamed-about sequel to this wizard-magic potions-'n'-stuff game is out and about (*Carnage Inc.* – reviewed this month) you'd better finish off *Pandora's Box* fast..

Try this cheat, from D J Zerafa in Malta. When the starting screen appears, hold down CTRL-ALT-F12 for about 20 seconds. Says D J, 'Simple, but effective.'

Hero Quest: It's so tempting to cheat at a role-playing game isn't it? All that kafuffle and messing around. Matthew Lord, of unknown territory, has got it sussed: change a few names, he says.

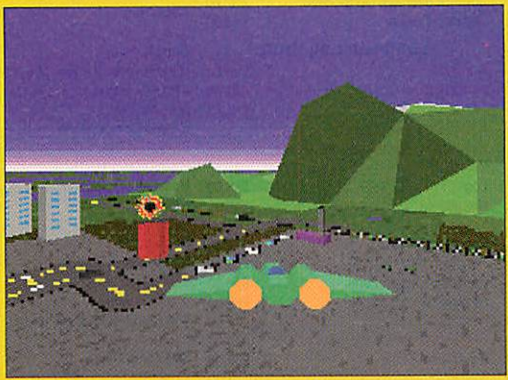
Try, say, Julie for the Dwarf and Ruth for the Elf. Melinda... now that's a Barbarian's name if I ever heard one. Susie the Wizard sounds good too, doesn't it? Now you can fight everything and open all doors. Thanks for the tip Matt.

From the Chocks Away hanger...

Fancy playing *Chocks Away* in the year 3037 on a TV game show? In the newest game from Andrew Hutchins (who wrote *Chocks Away*) and Tim Parry (co-author, *Stunt Racer 2000*), *Starfighter 3000*, you have to travel round the galaxy attacking planets, all the while being filmed and broadcast to 75 billion people across the universe. *Starfighter 3000* is a 3D space game, full of action and things to shoot.

Dropping out of the mother ship, you skim over the texture-mapped surface popping bad buys with your mighty cannon and completing various missions. There will be a split-screen, two-player mode, in which you can fly the missions with a friend's help, and hopefully a four-player mode too, but you'll need two computers for that.

Andrew and Tim have their own company now, called Fednet, and this is their first game. It will even have enhanced versions for people with Arm 3 processors or 4Mb of memory. The only problem? We're looking at the tail end of 1994, so it'll be at least next Christmas before the game is ready...


Starfighter 3000: Worth waiting for

England strike out

Gamesware plans to release *Striker*, a successful football simulation on other computer platforms, in the next month or so, and then *World Cup Striker* in the summer, fixed so that only Holland can win.

The view in *Striker* is isometric and you get to see about one-third of the pitch, which makes it easy to see who's around to pass to, or to avoid (and they won't be English players...).

Striker, the lastest miner simulation from Gamesware



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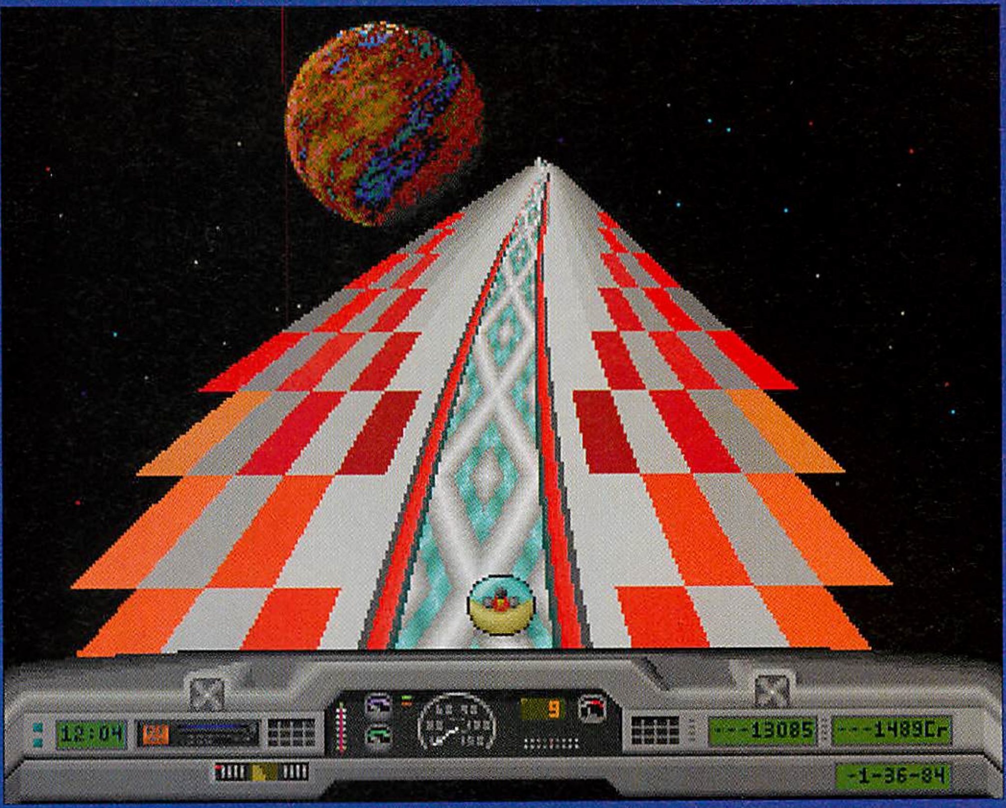
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PHAETHON

Way back in the mists of Greek mythology, some very strange things used to happen. Gods weren't always as cool as you might have expected.

Teenage Gods were the worst – for example the son of Helios the Sun God, Phaethon, was famed for driving his chariot extremely badly. It is not recorded whether the chariot had fluffy dice or go-faster stripes on it but it seems likely.

For some reason, the boy racers of the future have named their favourite sport after this wayward deity and spend all their time careering along winding tracks in space and never stopping at red lights.

It's all very much the same sort of thing you get up to in *Fervour* from Clares but done with a good deal more panache. While *Fervour* had tracks which twisted and turned fiendishly from side to side, *Phaethon* has tracks which go up, down, left, right and all over the place. Once it's loaded, you can hop in and out of the game via the desktop.

You have to be fairly handy with your mouse to get round the bends without falling off, and this is where a visit to the the upgrades shop might be a good idea.

Inside you can buy everything you might need to soup-up your racing sphere, including jets to keep you aloft for a while if you happen to drift off the track. For the rich (you pick up cash for doing well) there are even custom paint jobs, stereo systems and cabin accessories ('Keep that cabin fresh with perfumed Tommy Turtle!').

The way you skim along the tracks, zooming over lumps and twists, produces the same uncanny stomach-in-mouth feeling you get with *Lotus Turbo Espirit* from Krisalis.

The illusion of movement is greatly helped by having background scenery behind the tracks which moves accordingly when you turn, and when you finally make it to the end of a track, the crowd lets out an enormous cheer.

There's a wide variety of blocks and objects, some of which are activated when you pass over them or press a switch. The tracks even contain text, to give you hints and encouragement as you go.

There are dissolving blocks, slippery ones, slimy ones, and even ones which throw you off like a pinball, or send you right back to the start.

Included with the game is an editor program, which lets you design your own tracks, or edit the ones supplied (provided you've got the passwords for them). This is great fun and you can come up with some extremely silly tracks, with outrageous bends and gradients.

There are a few rather irritating bits though. After each game, an arcade style message appears asking if you want to continue, but if you would rather start again, or tinker with the engine of your vehicle, you have to wait for 10 seconds without pressing anything. This becomes distinctly annoying after a while as you sit there twiddling your thumbs.

The other unnecesarily long-winded part is the grief you have to go through in order just to enter your name on the high score table. Instead of simply typing in your name, you are transported to a small plane on which are arranged the letters of the alphabet.

What you then have to do is delicately propel your sphere around without falling off (which is difficult at the best of times!) and then press SHIFT when you are above the next letter you want. Nice idea guys, but what a palaver!

There are still a few bugs and mistakes in the game but these don't really detract from what is an enjoyable and playable variation on a tried and tested theme. Rather fab.

Mathew Tizard



Upgrades galore up for sale

CARNAGE INC

Supplier: The Fourth Dimension
Tel: (0742) 700661
Price: £25.95

Carnage Inc. is the follow up to *Pandora's Box* and continues in its tradition of isometric graphics. But where *Pandora's Box* was set in the past, with dragons, wizards and other entities, *Carnage Inc.* is very much located in the future.

The year is 2297 and Earth is ruled by a peace-loving council who have abolished all wars and conflicts, as you do. As in true life, there are still a few bad eggs who want to while away their time raping, pillaging, and generally causing as much carnage as they can.

Rather than take it out on the more laid back members of the community, the assorted collection of mercenaries form 'Carnage Inc.' and set off into space to boldly go where no man has been before (and also kill a few aliens along the way).

When an imminent alien attack on Earth is uncovered, Carnage Inc. is employed to seek out the enemy and destroy them. You, in the form of a giant, 2.5m tall robot, must infiltrate the alien headquarters and wipe them out.

The game is set over four planets and your first mission is to travel to D'aavit 4 and discover the fate of a missing Carnage Inc. agent. You are flown in by shuttle (depicted in a rather neat 3D vector graphics sequence) and then deposited in the headquarters.



A battle station, complete with grooving aliens and bubbling lights. Surreal eh?

As in *Pandora's Box*, the locations in *Carnage Inc.* are all depicted as isometric projections, rather like in the classic game *Knight Lore*. This means that a pseudo-3D view can be shown, thus allowing you to move in front of, and behind, objects and scenery.

Moving between locations is simply a case of finding a door (some may be hidden behind or underneath objects) and walking into it. The whole location then scrolls in that direction and is replaced with the new scene. As well as doors, there are a number of teleporters that let you move quickly from one place to another.

Movement is not only restricted to horizontal motion; staircases and ladders allow you to climb to gantries that may (or may not) link to other rooms. In some situations, it's far preferable to use this means of access to avoid the 'nasties' on the floor.

Objects can be picked up and in some cases, used to solve problems. A system of key-driven icons allows you to manipulate objects in a number of ways including open, close, and even eat.

As well as yourself, there are a number of other characters wandering around the rooms, some of which will give you advice if you ask the right questions.

The final, vital element of an adventure is the ability to save your position in the game and return to it at a later date. Unlike *Pandora's Box*, *Carnage Inc.* can be installed onto a hard disc, making saving and loading positions a doddle. It also does away with the need for disc swapping which was a major failing of its predecessor.

Playing *Carnage Inc.* is definitely an enjoyable experience, especially if you have no qualms about a little (justifiable) bloodshed. Everything runs smoothly and some nice touches like the 3D landing sequence add to the style of the game.

Sound on the other hand, is not up to the same standard. The instructions promised enhanced sound for computers with 2Mb or more (I played *Carnage Inc.* on a 4Mb A5000), but apart from the odd 'clonk' when my robot walked into something, the noises were minimal. Some atmospheric music would certainly have complemented the first-rate graphics.

All in all, *Carnage Inc.* is definitely worth looking out for. It is highly playable and the adventure element certainly keeps you coming back for more. Compared to other games on the Acorn platform, it's reasonably priced although it probably wouldn't get a look-in if it was released on another machine.

Rob Miller



Not a great deal of carnage here, but just wait...


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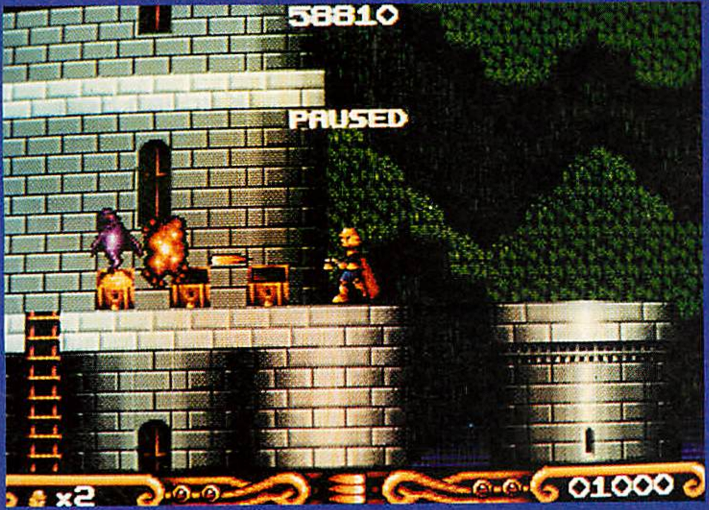


WARLOCKS

Supplier: Network 23
Tel. (0983) 290347
Price: £29.99 inc. VAT and p&p

Warlocks, from newly-formed software house Network 23, is a classic platforms and ladders game in which you, the hero, must search out the three evil Warlocks and slay them. Doing this will (of course) bring peace and light (etc.) to the world of Lylvania.

Armed with only a trusty crossbow, you must traverse ten stages of platforms and ladders, set in exotic places such as the forest, under a waterfall and below ground in the caves. As well as having to negotiate jumps and drops there is a plethora of ghouls and goblins, ready to make life that much harder.



The first level starts in the forest and running around on terra firma is relatively easy. Spiders drop down from trees but can be disposed of efficiently with a single bolt from your crossbow. Bats, on the other hand, swoop down quickly from above and can take a few hits before they are killed.

As you progress through the land, other nasties join the band of villains that are out to get you. Like the bats, most of them require to be hit more than once in order to die, so it is fortunate that you can pick up various power-ups to boost your crossbow. Extra lives can also be collected, up to a maximum number of nine.

Like other platform games, especially the more recent ones such as *Zool*, the land in *Warlocks* is full of secret passages and hidden rooms. Most of these are behind seemingly solid walls and can take some time to find. Once located, they tend to be stuffed with treasure (which increases your score), plus, if you're lucky, one or more extra lives.

The first thing to strike me about *Warlocks* were the graphics. A 256-colour mode is used throughout the game and excellent use is made of different shades of colour to give a real sense of depth to the display. Parallax scrolling (moving the background scenery slower than the foreground) is also used to good effect, further adding to the illusion of distance.

Animation in the game is top notch. Everything, including the whole screen, moves smoothly at an astounding 50 frames per second and although there are never that many characters on screen at once, they all walk, fly and so on in a really convincing manner. Armed skeletons are a particularly nice example, especially when they emerge from the ground and chase after you with sword and shield in hand.

Like a number of Acorn games, *Warlocks* features a collection of weather effects. Although they don't particularly hinder you in any way, they provide yet another dimension to the game. The rain and lightning in the graveyard section certainly set the scene, with the crashing of thunder sounding excellent through a hi-fi system.

Apart from the thunder, I was a little disappointed with the sound: it's not that it's bad but more that there's hardly any of it. I know there has to be a trade-off between graphics and sound, but something more than the occasional 'plonk' when you hit a bat would have improved the game even further. There is music, but it only seems to be played during the loading screen.

To sum up, *Warlocks* has to be one of the best platform games that's been released. Thirty pounds may seem a lot of money but *Warlocks* is good value compared to other similarly-priced titles for the Archimedes. If you have any money left over from Christmas go out and buy it now.

Rob Miller



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An artist's impression of Zurid Pino's Cobra. Oh, he wants to kill you too

Missions Impossible

Elite is an alternative lifestyle. James Staples shows how to boldly go where few have gone before

While trawling the known galaxies I encountered one Commander Ehyou, a struggling pilot yet to complete all missions, and helped him reach *Elite* status within days, largely due to the contents of a confidential TS ComDirect report, acquired under circumstances I do not wish to disclose.

The report was written by Commander Verification (seconded from Copyright Infringement) who suffered a rude awakening and considerable stress in the line of duty; of all *Elite* platforms it seems our 32-bit community cheats the most.

I quote: 'Although the lull between the departure of 8-bit spacers and arrival of 32-bit spacers afforded us considerable opportunity to restructure, our best measures have proved insufficient to cope with the nasty habits of the new arrivals. The horrors I have witnessed! All GalCop Viper beats should be made aware of the despicable, treacherous and sordid habits of 32-bit spacer beings.

'As evidence I recount my investigations into one Commander Vlad and his experiments with minerals. Vlad was an early 32-bit arrival, a seasoned 8-bitter obviously more intent on finding loop holes than playing fair.

'TS evidence showed him shooting asteroids for combat points but he soon learned that one asteroid could provide many points if first fragmented. Did Vlad rush to change his darling military laser for a mining type? Did he heck, as Vlad lets Belters split asteroids then shoots the splinters from the pull of their scoops!

'However, this is nothing compared to the scandalous impunity of the uncultured practices employed by a crass plebeian named Commander NastyGet.

'This uncouth barbarian should be branded eternally Fugitive for his abhorrent and despicable practice of hyping to a Poor Agricultural world to purchase a Mordahi full of minerals, ejecting them in a line inside a Safe Zone and shooting the lot.

Commanders in a hurry should note that 'various techniques are employed to obtain non-mass loaded jump space. Some commanders scoop the escape craft of deposed pirates then eject them as cargo into deep space. Some fly diametrically away from other craft then turn to their original destination to jump. Ungracious pilots ram.'

Hoovering up the final tips, 'Wise commanders under multiple laser fire minimise damage by flying toward their attackers, stopping short of collision. Of missions two and three, tactical pilots will isolate Zartid/Zurid then cease fire to track continually above the nose of the target until their shields have restored. Those going to Xeean pack sandwiches.' The tracking tip also applies to accurate sighting of lasers.

Combat status for missions: Poor (Santarri), Above Average (Santarri), Competent (anywhere), Dangerous (Xrata).

Commander EhYou chose not to be pirate, trader, bounty hunter or belter. He became *Elite* because he chose to be all of these.

If you have experiences to recount, particularly concerning Dredgers or Generation Ships, the *Elite*-aholics at *Acorn User* would like you to write in. We feel our position at the bottom of the *Elite* moral scale must be defended!



Fun in the safe zone



Paranoia? No, all these commanders really do want to kill you

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Spring into action

Last month, Michael Attenborough showed you how to simulate a world full of springs. Here he explains how it works

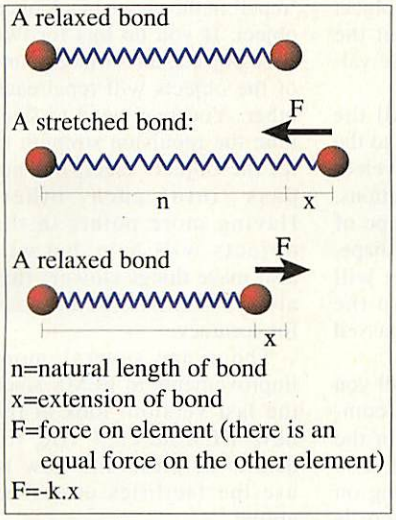


Figure 1:Bonds

I am going to delve deeper now into *FEMS* and outline some of the more major enhancements included in the version on this month's cover disc. Any script files which worked on the previous version of *FEMS* will still work, but you now have even more possibilities for amazing effects.

How it works

FEMS stands for 'Finite Element Materials Simulation', and its name came about because the program simulates various materials by modelling them as a finite number of simple elements.

Finite element analysis (FEA) is a popular computation method which is used not only in analysing the behaviour of mechanical systems, but also of heat and fluid flows. It is the method which is used on supercomputers to calculate weather forecasts.

Finite element analysis involves splitting a system up into small parts, each of which have a simple behaviour. The more complex complete object, which could not be simulated as a whole, can then be studied.

FEA often also involves splitting time into small slices and assuming the system does not change its state during each slice of time. The state of the system for the next time slice is then calculated from the previous state.

In *FEMS* each object is modelled as a collection of entities which each have the properties of position, velocity and a small fixed mass. These have effectively zero size, and are known as 'point masses'. These are in fact the 'elements' referred to in the title of the program.

The point masses have interconnections which I have called 'bonds'. Each bond between a pair of elements has a 'natural length': if the elements are closer together than this distance then the bond will push them apart, and if their separation is larger than the natural length the bond will pull the points together.

The bond acts like a spring connected to the two elements, which tries to keep its length equal to its relaxed length (see Figure 1). Each element is bonded to many other elements, giving the resulting object its rigidity. The 'nearbonds' command in the script achieves this by bonding each point to any others which are within a certain range (see Figure 2).

Given that this is the model we are using, how do we use this to simulate the objects? The program uses three basic rules:

$$1 \quad a = (\Sigma F)/m$$

$$2 \quad \delta v = a.\delta t$$

$$3 \quad \delta x = v.\delta t$$

The first rule says that you get the acceleration of an element by adding up all the forces on it and dividing by its mass. The second says that change in the velocity (v) of an element over a small amount of time (dt) is approximately the acceleration multiplied by the amount of time. The third rule is similar, and says that the change in the position (x) of a point over a short time dt is approximately the velocity multiplied by dt. The last two rules are more accurate for smaller values of dt. We can combine the first two rules:

$$4 \quad \delta v = (\Sigma F).\delta t/m$$

This and the third rule are used in the program. For simplicity, the program assumes the masses of all the elements are equal to 1, and dt=1/time_div. The program goes through all the bonds in an object, works out the forces they are exerting, and adds each force on an element onto its velocity vector (rule 4). It then does the same for forces which are exerted by the background objects.

When the new velocities have all been found, the program uses rule 3. With the above definition of dt, this makes the rule (new position)=(old position)+v/time_div.

Explosions

The approximations in the method described above are

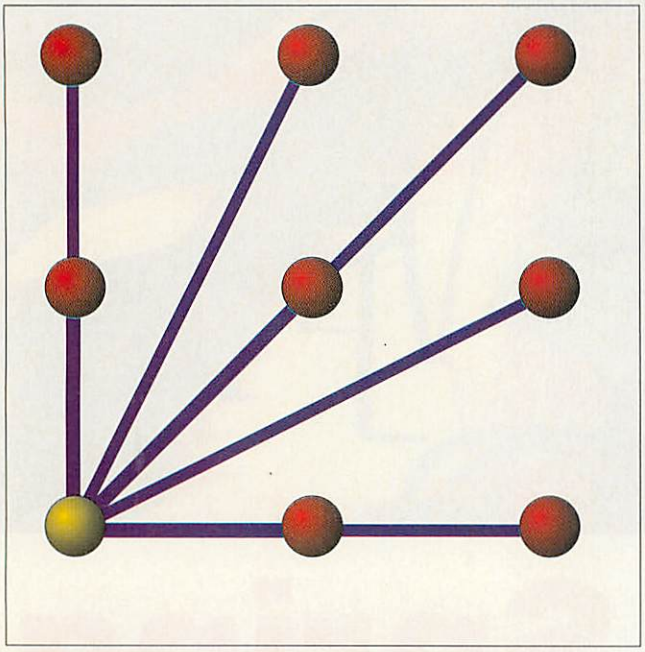


Figure 2: Each element is connected to many others

the reasons why objects sometimes explode when there are large forces on elements. If the bonds become very stretched (figure 3), the velocity of the element can be so large that when added to the position, it moves the element to a place where the bonds are stretched even further.

Now in each subsequent frame the bonds become more and more stretched, making nearby elements unstable at the same time, resulting in an explosion. It is the time-slicing approximation that causes the problems, and increasing time_div will improve the situation.

New features in FEMS v2.3

The version of *FEMS* on this month's cover disc includes, as promised, some enhancements over the previous version. Firstly, the sphere definition has been changed so that the rings it is constructed out of have fewer elements if they are smaller.

As well as giving a sphere which is quicker to draw, this means you can have a sphere as a solid object: this couldn't be done before because the points in the sphere were not evenly spaced. The solid_sphere object type lets you nest any number of spheres inside each other to create a solid or hollow sphere object. Several of the new simulation scripts on the disc make use of this.

Damping

The damping routine in the previous version of FEMS used a simple method whose effect was similar to having wind resistance on every element in an object: the faster a point was moving, the more it was slowed down.

This gave a realistic effect for objects like cloths, whose behaviour is strongly affected by air resistance, but it also rapidly slows the rotation of a spinning ball, for example, and prevents free-falling solids from picking up much speed. To give realistic behaviour you can reduce the damping (by increasing the number after 'damping', not decreasing it), but then the objects tend to wobble repeatedly after hitting anything.

To damp out wobbles without affecting the movement of the object as a whole, I had to damp the motion of the elements relative to the motion of the object. This means that instead of pulling the element velocities towards zero, as was done before, they are pulled towards the velocities they would have if the object was completely solid.

In programming terms this means finding the average velocity of the elements in the object, and then finding out how fast the object is rotating and what axis it is rotating around. In practice, the effect is very good: there are animations on the disc which roll a sphere along the ground, which could not have been done before, and the 'chair-on-the-stairs' is much less inclined to wave its legs around, and is generally more solid. But if you really want more solid objects...

Frozen jelly

There is a useful side-effect to this new method of damping: once the program has worked out what the velocities of the elements would be if the object was solid, it can just set the element velocities to these values.

If we do this after all the forces have been applied to the elements, but before the velocities are added to the positions, this will 'freeze' the shape of the object to its starting shape. Any bonds in the object will now have no effect, so the bonding routine is by-passed for speed.

To obtain this effect, all you need to do is include a command 'solid_damp -1' in the create block of an object. You can still have air damping on the same object, and there is nothing to stop you having frozen and normal objects in the same simulation.

Interacting objects

If you tried having more than one solid object in a simulation using last month's program, you would have found that they passed straight through each other. Having one solid object interacting with another is more difficult than having it interacting with a background object: those are simple because the background object cannot change shape, and the shapes are always simple.

In the new version of FEMS you can include a command 'repel' in the create block of an object. If you do this for two solid objects, the surface points of the objects will repel each other. You may need to fine-tune the repulsion strength to let the objects meet, but not pass into each other. Having more points in the objects will help, but will also make things slower: this always seems to be the price for accuracy.

There are several more improvements to FEMS since the last version: look at the new *FEMSdoc2.3* file for details of these and how to use the facilities described above.

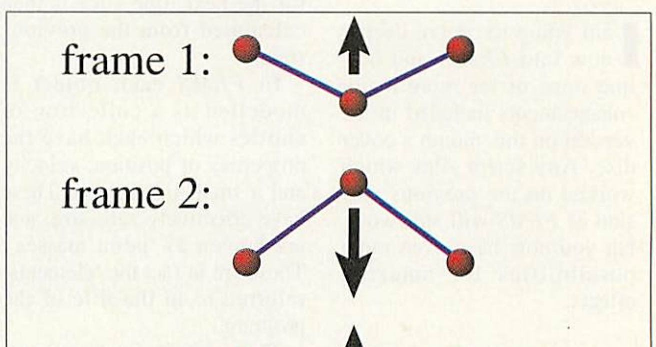


Figure 3: How explosions occur

ArtWorks

Version 1.5

The latest version now includes full support for 24-bit sprites, making it the first Acorn graphics package to support full colour sprites. It is also compatible with the new graphics filter system used by Impression and includes a filter for TIFF files (the industry standard format). ArtWorks now includes the ability to print and separate these full colour images. Finally 1.5 is also a new 'fast load' version of ArtWorks - this is an advantage to all users but particularly useful for relatively slow filing systems such as CD or networks.

" ArtWorks is quite simply the best vector drawing software on the Arch"
Computer Shopper

To mark the release of ArtWorks version 1.5 we thought we would take the opportunity to remind you of some of ArtWorks most outstanding features:

• Full anti-aliasing of drawings to give superb on screen quality • infinite undo, so no mistake is final • ultra fast screen re-draw • an easy to use toolbox • fast and easy to use graduated colour fills • a blend tool for tweening or morphing • an envelope tool for all sorts of distortions • a perspective tool to rotate in 3 dimensions • a text tool to enter text in any font, any angle any size - and the text remains editable on the page even after graduated fills • text around a curve • a freehand line drawing tool • the ability to break complex drawings into a number of layers • read and write file compatibility with CorelDraw, Illustrator, Freehand and various Acorn formats • ArtWorks files can be dropped straight into Impression and other major Acorn WP/DTP packages • print tiling allows poster sized prints • compatibility with all RISC OS printer drivers (including Computer Concepts 24bit colour drivers) and PostScript printers • zoom in and out • multiple window views of any drawing • interactive object dragging, scaling, rotating • a large collection of sample clip art included free • 220 high quality outline fonts included free.

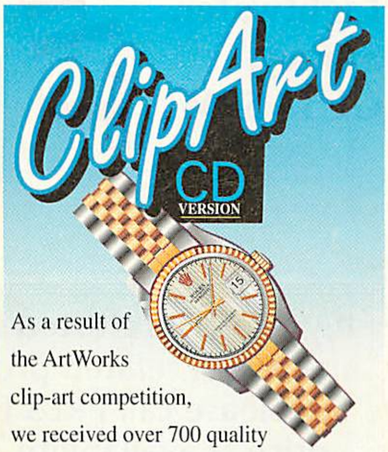




"It's the best ever art program to hit the Archimedes".
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Upgrade from the floppy disc version to CD version £29.00 + VAT (£34.07 incl.)



As a result of the ArtWorks clip-art competition, we received over 700 quality entries - this CD contains the best of them and many more ArtWorks examples (and the ArtWorks Viewer so that non-ArtWorks owners can view them). The illustrations can be used by anyone for incorporation into a growing range of Acorn applications that can take ArtWorks files. The disc also contains dozens of 24-bit high quality photographs (ideal for use with the 24bpp version of Impression and ArtWorks 1.5) and a demonstration version of AudioWorks with example audio files.

"In short, it is amazing"
Archive

RRP £19.00 + VAT (£22.32 incl.)



A full 8 page specification on ArtWorks is available on request.

Computer Concepts Ltd
Gaddesden Place
Hemel Hempstead, Herts HP2 6EX
Tel.: 0442 63933 Fax: 0442 231632
EMAIL: Info@CConcepts.co.uk

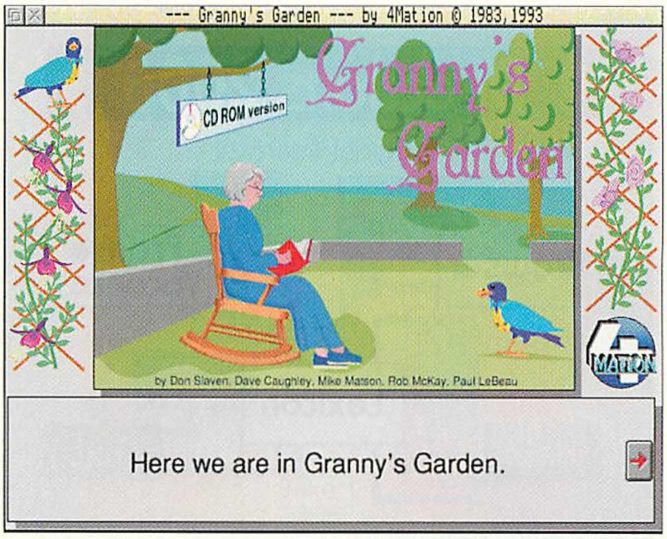
Granny's Garden on CD-Rom

Supplier: 4Mation
Tel: (0271) 25353
Price: £29.95

Most secondary schools will by now have at least one CD-Rom drive; personally I don't know of a secondary school that doesn't own one. Sadly, the same cannot be said of primary schools.

The reason for this is largely due to the fact that nobody seems to be prepared to fund CD-Roms in primary schools because there is only a limited amount of CD software appropriate for primary children.

A Catch 22 situation has now arisen because the software developers feel that they don't want to invest in CD software for the primary sector as there isn't enough hardware around to make it worthwhile; all credit then to 4Mation and Cumana who have released this CD-Rom specifically aimed at primary school children.



Granny now lives on CD-Rom

Based on the original adventure program from the days of the BBC, 4Mation completely re-wrote *Granny's Garden* for Risc OS, and have now extended and enhanced it further for CD.

This really is a delightful program featuring some superb animations by Don Slaven. For those who are unfamiliar with the storyline, you have to find six children who have been kidnapped by the wicked witch.

You are taken to a variety of places where you are introduced to some colourful characters. There are some problems to solve, some items to collect and a wicked witch to avoid.

The CD version costs just £5 more than the floppy version, and as such I would say is well worth the extra, if only for providing a more robust medium.

As with all 4Mation's products, there are lots of ideas for further work included in the pack and a worthwhile addition is the resource pack which also includes photocopiable worksheets for extended work.

Geoff Preston

The Environment: Water

Supplier: Academy Television
Tel: (0532) 461528
Price: £130

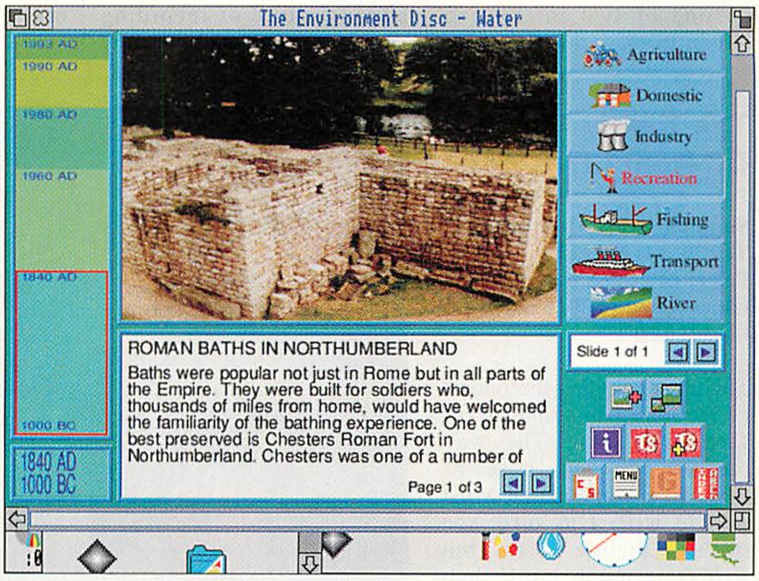
In terms of look and feel, this CD-Rom is similar to *Science: The Elements* (reviewed in the December 1993 issue of *Acorn User*). That is hardly a surprise, since both were developed by Interactive Learning Productions in conjunction with Yorkshire Television, and are distributed by Academy Television.

However, having found a workable format, ILP does not apply it wholesale to all its products, and the structure of *Water* is just as intuitive but slightly different to that of *The Elements*.

The first section of the disc, *Investigate*, opens with a screen described as the 'river interface'. This presents the user with three intersecting axes of investigation.

Down the left-hand side are a series of 'time bands' and across the top are a number of 'aspects' – political, social, economic, scientific, health and domestic.

In the centre of the screen is a graphic of a river scene which you can scroll around. Click on this picture and six theme icons appear. These are: a tractor representing agriculture; a house for domestic water usage; chimneys to indicate industry; a person fishing for recreation and water; a boat for commer-cial fishing; and a passenger ship for transport.



Everything you ever wanted to know about water

This is not a linear approach to information retrieval and it's quite difficult to explain on paper, but in practice the data on water is accessed very easily by clicking on these broad headings, in any combination. The package calls screens 'slides' and a slide always contains text and a graphic or photograph plus, perhaps, a sound recording and a video clip.

One rather good feature is called Trailsave. This facility allows you to pick and save slides so that you can assemble your own selection of information. The second section consists of case studies on a number of famous/notorious environmental topics or contentious issues, like the Thames barrier, the Exxon Valdez affair, cholera and dolphins being trapped in fishing nets. These are presented in the same way as the main database with clear words and pictures at the right level for key stage 3 and 4 students.

There is an enormous amount of exciting and stimulating information on this disc and it has great potential for work across many different subject areas. Using it is very easy, and the only tiny criticism I have is that the number of icons and buttons on-screen at any one time can sometimes become a little confusing.

Alice Smith

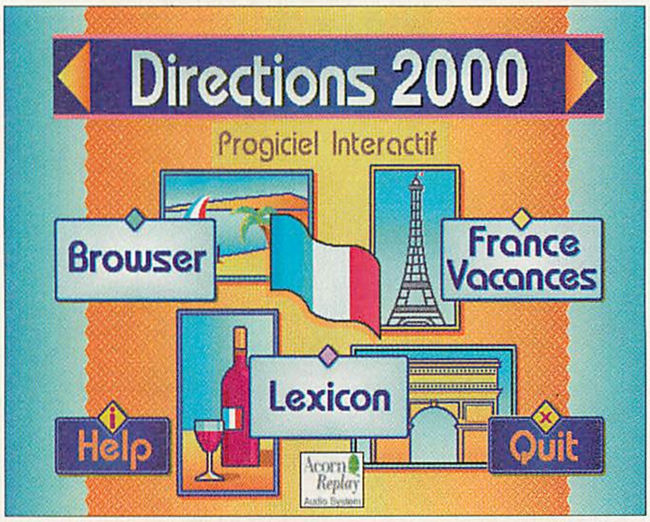
Directions 2000

Supplier: Interactive Learning Productions
Tel: 091-261 1255
Price: £140 inc VAT and microphone

Described as an interactive multi-media CD, *Directions 2000* is one of a new set of CD-Roms produced with government support by Interactive Learning Productions.

To refer to this as just a CD really doesn't do it justice. *Directions 2000* is an educational resource developed by teachers to help deliver the National Curriculum, and with careful use, this product will form a valuable part of a Modern Languages course.

In simple terms the program is in three parts: *Lexicon*, a dictionary allowing access to an alphabetical list of 1400 keywords; *Browser*, which groups words into themes; and *France Vacances* which takes the user on one of two interactive adventures, Chateau and Forest. This package is not just a CD version of a floppy-disc program; it has been carefully thought out and extracts the maximum from the medium.



Well-presented and well worth it

French phrases are spoken as well as being displayed on screen and there is also the added feature of recording your own voice and instantly replaying it to see how you're getting on (or should I say hear how you're getting on).

This is an exciting disc which should be sitting in the corner of every Modern Languages classroom. As well as the French, there is also a Spanish version with a German one on the way.

Geoff Preston

The Really Useful CD-Rom (2)

Supplier: APA Multimedia
Tel: (0634) 295222
Price: £49 + VAT per issue, 3 issues for £132.30, 6 issues for £220.50

This disc contains the oddest collection of bits and pieces I've ever seen. The way the disc is set up, it seems more like a magazine. Most people will, I'm sure, see this as a picture library, but *RUCD* is much more than that.

True, there are lots of pictures, mostly digitised photos in sprite format, and in this issue there are several files from Australia including several from the 1989 Australian Grand Prix. I wonder how useful they will be.

There are some *Draw* files, many of which started life in sprite format and were reworked with an outline program, and some applications, several of which can be found in the various PD libraries. There are also some Ace films, including the animation of the Olympic rings, but isn't that included on the examples disc supplied with *Euclid*?


Very pretty, but is it really useful?

At £50 per issue (or less if you take out a subscription), I suppose it's not bad value, although, as to its usefulness, I suppose everything is useful if you can find a use for it. Personally, I would like to see the word 'Really' replaced with either 'Slightly' or 'Possibly'.

Geoff Preston

SSERC Graphics CD-Rom

Supplier: SSERC
Tel: 031-668 4421
Price: £150 for full site licence

Having spent quite some time with this disc, I have some very mixed feelings about it. It is crammed full of clip art in *Draw*, sprite and DXF format, and there are a number of data files and some applications. There's even a couple of movies in *Noot* format (*Noot* being the animation program by 4Mation).

I assume the drawings are scientifically accurate although the quality of the artwork is variable, ranging from excellent to just adequate. What concerns me is that I can't help feeling that the disc contains a lot of padding which you seem to have to wade through to get to the good bits.



Of the many quality *Draw* files on this CD, one of my favourites is of a human skeleton. However this appears on the disc as a complete skeleton, with and without internal organs, and as a series of files under the heading of 'Bones'.

The 'skin' for the skeleton appears in *Draw* and sprite format. This duplication leads me to suppose that there wasn't really enough data to fill a whole CD and so it has been duplicated in various guises to fill the space. Having said that, there is a 'finder' program included which helps you locate the drawing you want by giving a line of text which expands on the filename.

Considering what you get, many schools are going to feel that the £150 price tag is going to be out of reach.

Geoff Preston

The World of Number Series

Supplier: Numedia Projects
Tel: 071-916 9999
Price: £59 + VAT per disc

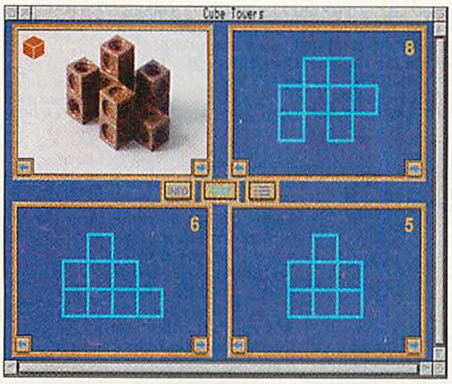
There are about a dozen CDs in this series which was funded by the National Curriculum Council to help improve Mathematics education. They are aimed mainly at Key Stages 3 and 4, so that is mainly secondary school students and possibly top primary.

I've seen four of the set, and they are all similar in style, giving both the main program and an introduction which takes the form of both an introduction to the series in general, and to each particular disc.

These programs make extensive use of Acorn Replay sequences and speech which make them an ideal resource for students' own investigations. Also included on each disc are an assortment of worksheets in *Draw* format, which can be printed as needed. The likely educational value of each disc, I feel is variable.

Who Stole The Decimal Point? is an adventure where students have to solve a number of problems to complete the story. This would seem an ideal exercise for a small group of students to work their way through.

Picture Gallery is described as a resource intended to encourage students to work out their own questions from one or more of the 700 pictures on the disc, although activities have been provided to accompany many of the pictures.



Perspectives in action

Number Games and Short Tasks gives introductions to a variety of tasks. It is suggested that these are run by the teacher either at the start of a lesson or as an introduction to a piece of homework. There are some new and some old problems cleverly presented, but I'm not sure if a video recording of the films wouldn't be better, accompanied by a floppy disc containing the worksheets. There seems to be no advantage in having this on CD.

In *Perspectives*, the screen is divided into four parts and the student must ensure the contents of each quarter is consistent with the others.

One corner will have a film, whilst the other three will have data based on the film, and the student has to match the correct data to the film.

Cubes is on the same disc and shows a photo of some shapes made with 'Multi-Link' cubes, some of which may be hidden from view.

The student must select the correct front, side and plan view to match the picture. When correct, you have the option of rotating the photo to see which parts were hidden.

Of the four discs I have seen, I feel all could be a valuable resource if handled carefully. *Perspectives* though, stands out as a particularly well thought out product.

Geoff Preston

Using Objects, Using Pictures, Impressionism and Limestone Scenery

Supplier: ITAL
Tel: (0422) 357832
Prices: Using Objects £17.02, Using Pictures £12.77, Impressionism £34.04, Limestone Scenery £34.04
Teaching pack: £6 for Imp, £5 for the rest

These four packs from ITAL, Calderdale LEA's new software imprint, have been lumped together largely for the convenience of the reviewer, but it does make sense to look at them as a set because the subject matters are related and the principle behind each one is essentially the same.

To take *Using Objects* as an example, this comes on two discs, containing a number of *Edit*, *Draw* and *Paint* files which can be combined in almost an infinite number of ways. For the student, there is a collection of worksheets and 24 photographs of eight different irons. For teachers, there is information about how the material can be used and the National Curriculum attainment targets and programmes of study it can fulfil – here it's history, technology and IT.

Obviously the user needs to be familiar with the three basic Acorn applications but once they have been mastered, the contents of *Using Objects* are extremely adaptable. The text and graphics files can be imported in to any word processor or DTP package, and the numerical data about irons is in CSV format so it can be loaded into any spreadsheet or database.

This means that teachers can select the aspects of the package which they want to use and present them in any way they desire. For instance, the worksheets can simply be printed out and used as they stand or they can be adapted. The material can be utilised with the whole class for demonstration purposes or it can be given to fast finishers as extension work.

The activities in this particular resource are designed to contribute to three broad learning outcomes. They aim to encourage pupils to use artefacts as the basis for historical inquiry; to know that products are usually the result of a technological process which involves designing and making; and to understand that some of the needs of everyday life can remain constant over time, although the way these needs are satisfied can change.

Suggested activities range from grouping photographs into sets and identifying cut-out details, just like on Ask The Family, to explaining how the charcoal iron worked and looking at how the design of irons has been improved through the ages. However, as the documentation emphasises, these suggestions are not exhaustive.

Using Pictures is based on a series of plates taken from Rustic Vignettes for Artists and Craftsmen, while *Impressionism* – on four discs – contains a gallery of Impressionist paintings and a wealth of information about the artists and what they painted.

Limestone Scenery covers a slightly different type of topic, but again the approach is the same, though here there are 30 photographs of the countryside around Malham, Goredale and Ingleborough in North Yorkshire, along with extracts from the Ordnance Survey maps of the area.

These materials aren't frilly or flashy. For a little extra you can buy a teacher's pack, with ideas on how to use the resources in the classroom, but in the standard pack all you get is a box with the discs in it and a plastic folder with printouts of all the text files.

However that is to their credit because, in a sense, they are good, old fashioned resources. They could have been produced by any teacher with a computer, a scanner and some spare time on his or her hands, but as time is a scarce commodity for teachers, I can heartily recommend these resources as the software equivalent of a frozen dinner.

Alice Smith

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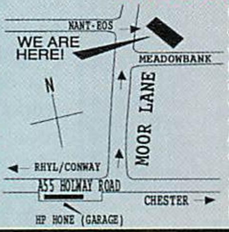


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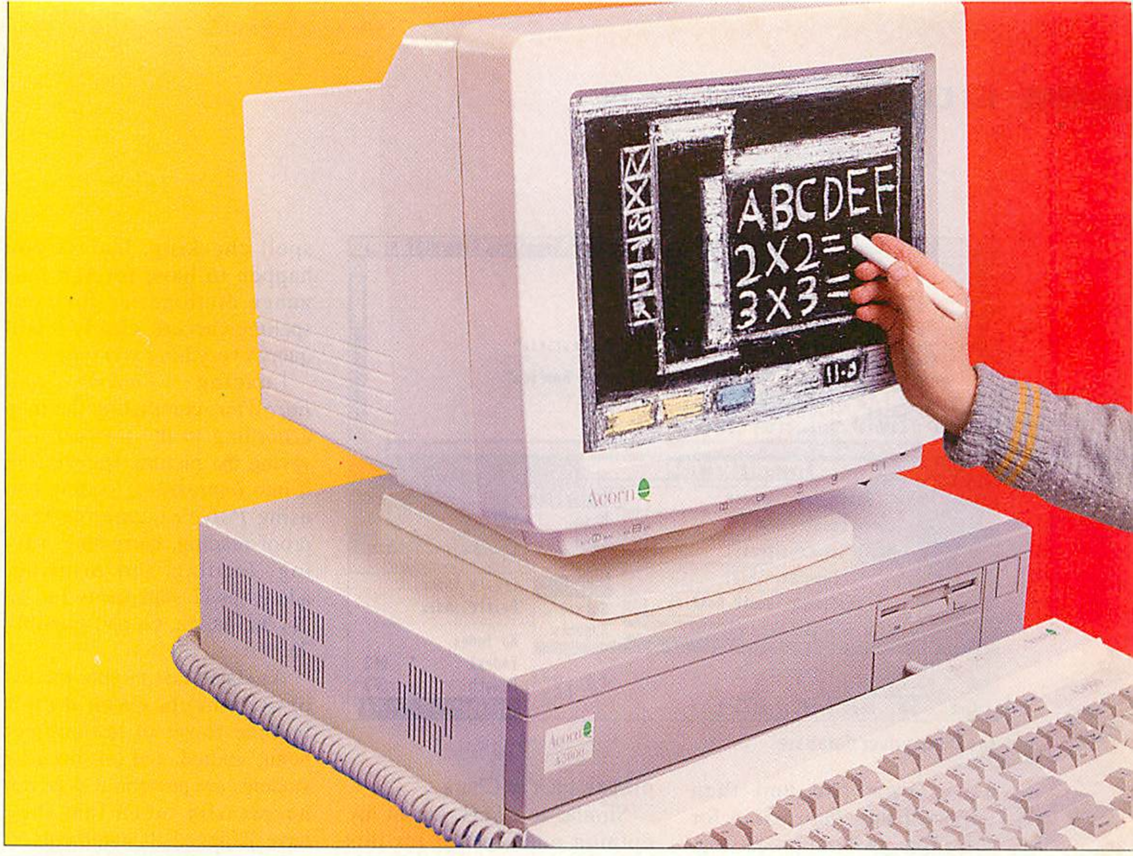
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The Teacher's Guide to the National Curriculum

In part two of his comprehensive guide, Geoff Preston takes a look at Modern Languages and Humanities

Having started delivering Information Technology in Year 7 with English and Mathematics, I was asked if I could provide some work for Year 8 students in Humanities and Modern Languages. Humanities was fairly easy, but software for Modern Languages was at that time limited to say the very least.

When it was suggested that I work with Modern Languages, I seriously questioned how useful IT would be. I got a list of topics from the Head of Modern Languages and sat down and thought how IT could provide any meaningful work. The language software around at that time was dreadful, most of it being computer versions of books and an assortment of games.

I contacted one of the software houses and got its permission to modify a version of Logo which they had been marketing for the old BBC computer.

I simply re-wrote the commands so it responded to French, so, instead of FORWARD 100, we entered AVANT 100 (encouraging the students to speak the numbers in French). Having produced it in French, German, Greek and Turkish, we used it for some time, and although it pre-dates the National Curriculum, it is still occasionally used.

The problem with Logo in a foreign language was that whilst it worked well for IT, it didn't really do the job of helping teach numbers as well as I would have liked. It was, however, a worthwhile experiment and it led to better things.

Enter smArt

At about that time, I was involved in developing some materials for a forthcoming program called *smArt* by 4Mation. For those who are unfamiliar with *smArt*, on the screen is a drawing which has been constructed very carefully with a number of interchangeable parts. Move the mouse pointer over the part you wish to change, click Select, and a menu appears giving a list of the alternatives. Click on the option of your choice and the drawing is redrawn with the new part in place. It's a simple idea, brilliantly executed.

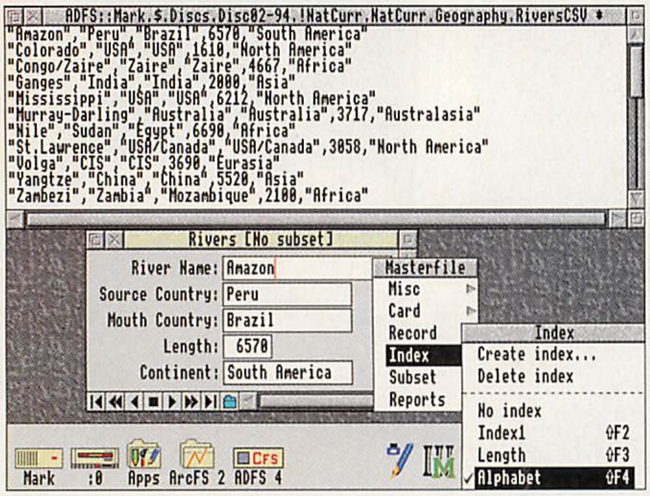
There were several of us developing files for use with *smArt*, and one of the directors, Mike Matson, used to pass the materials out to everyone else to give us more ideas. One of the files that came my way was called Al Orange – a French duck who had various likes and dislikes. All the menus associated with Al Orange were in French, so I gave it to our Modern Languages department to see what they thought. To cut a long story short it was, and still is, very successful, and since then I've gone on to produce a whole range of *smArt* files in an assortment of languages.

I believe *smArt* is one of the best programs around for creating IT material for use with any subject. If you know how to use *Draw* and you've got the time to produce the files, then it's well worth buying. It's especially good for developing Modern Language material as it lets you dictate what appears on the menus. If you haven't yet got a copy of *smArt*, send a blank disc and an SAE to 4Mation and they'll send you a demo version containing all the features except saving. You'll need *smArt* to run some of this month's files on the disc.

So successful has the Modern Languages work been, IT now plays a key role in its delivery, not just in Year 8, but also in Year 7 and in Year 9.

In Year 7 Modern Languages, one of the topics covered is the weather. Included on this month's disc is a version of our *smArt* file *EuroWthrF*. This is the French version (we also use it in German and English, and a Spanish version is being developed) showing the map of Europe. Click on one of the cities and a menu containing a list of weather conditions is shown. Click on the weather of your choice and the symbol is displayed on the map.

This can be used in a variety of ways but for Year 7 it is usually used so that students can work out the meanings of the words from the accompanying symbols. Having completed the map, it can be saved



Creating a river database

as a *Draw* file and then imported into *Impression* for some foreign word processing. This takes the form of writing simple sentences, in French or German, which describe the weather.

Word processing in a foreign language presents a few problems, but generally these are not insurmountable. Most European languages use the same characters as we use, with half a dozen extra ones. These can be accessed by typing in a number on the numeric keypad in conjunction with the ALT key, or by using a full character display player such as Chars.

Similar to *Chars*, but in my opinion much better for this purpose, is *Polyglot* from Risc Developments. I prefer *Polyglot* because it allows you to display only the extra characters for the language you are using. As with all good programs of this type, click on the character in the display and that character will be printed at the cursor. This is fine for French and German, but for Greek or any language using non-Arabic letters, more drastic action is needed, like keyboard overlays.

The other problem is that of spell checking. Unless you happen to have foreign language dictionaries for your spelling checker, clearly it will query everything you type.

Loading *smArt* and *EuroWthr*, completing the map according to the instructions, saving the picture, transferring it into *Impression*, loading and using *Polyglot*, entering text, proof reading, correcting, saving ,loading and printing, addresses IT statements 1a, 2a, 2b, 3a, 4a, 5a, 6a and possibly 7a.

As stated last month, the list of statements given do not include those of the subject being studied, and just because students are present, it does not necessarily mean that they have achieved all statements.

In Year 8, the *smArt* file used is *Meal* which appears on the *smArt* Modern Languages Starter Pack, and *Mealtime* which is another version we are developing. These files complement the work done on the subject of food in both French and German lessons. Again, the picture is created, dropped into *Impression* and a 'menu' is then created where the students not only have to list the items on their plate, but also the alternatives and to guess at some sensible prices (in the currency of the target language, of course).

Loading *smArt* and *Meal*, completing the table setting according to the instructions, saving the picture, transferring it into *Impression*, loading and using *Polyglot*, entering text in the form of a menu, proof reading, correcting, saving, loading and printing, addresses IT statements 1a, 2a, 2b, 3a, 4a, 5a, 6a, and possibly 7a

In Year 9 the *smArt* file used is *Faces*, which two teachers from our Modern Languages department translated into German and French. The picture created from *Faces* goes into an *Impression* document which looks rather like an identity card. There are some parts for the students to fill in like name and address, and a short questionaire at the bottom. (*Identity* is also included on the cover disc.)

Further Modern Languages/IT work is carried out with the aid of *Gemini* by Cambridgeshire Software House. *Gemini* is a matching pairs game. I have to say that I do have a bit of a blind spot when it comes to games in the classroom, but this is a great one-lesson-only treat which is usually done by small groups of Year 7 students in the

Creating climatographs for geography

The graph program we use, *Graphbox Professional* by Minerva, is a superb package. Unfortunately climatographs are not among its extensive repertoire, and the only way to create a climatograph at present is to first create the bar chart, then the line graph, and lay one over the other. It sounds daunting, but it is in fact quite simple.

The bar chart contains all the labels like name, title and labels for x-axis and y-axis. The line graph has very little information on it apart from the line itself and the y-axis with the labels. The two graphs are saved as *Draw* files. To put them together, load the bar chart first (into *Draw*), and then the line graph is dragged over it.

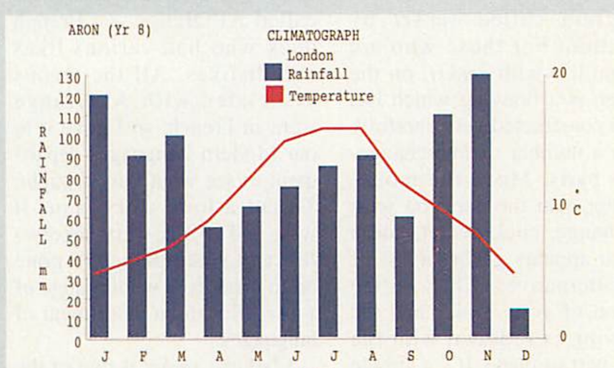
There are a couple of small snags with this method. First, if you are using *Graphbox Professional*, the background from the line graph will need to be deleted otherwise it will cover the bar chart. Secondly, the line graph may have to be stretched to fit the bar chart. Thirdly the y-axis of the line graph, which is displayed on the left, will need to be transferred to the right, along with the labels.

This method of producing a climatograph works equally well with *Presenter*, *Presenter GTi*, *Advance* and presumably any graph program that outputs a *Draw* file. However, I think it's now time Minerva added climatographs to *Graphbox Professional*.

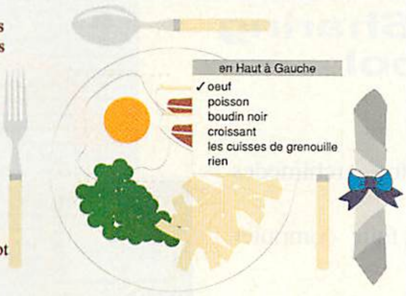
Creating four graphs, making them into two climatographs, loading, saving, manipulating drawings and printing addresses statements 1a, 2a, 2b, 3a, 4a, 6c and possibly 5a and 5d.

As with the work offered in Year 7, writing about their IT experience could contribute to the students' IT capability by adding several more statements including 3d, 4d, 4f, 6e and 7f. Word processing, rather than hand writing, is even better.

Whichever way the text is created, students could capture some of the icons, menus or windows from the programs they have been using and either print and glue them onto their hand written work.



An example climatograph produced with Graphbox Professional



Meal is typical of the pictures produced with a smArt. Pupils construct the picture from parts selected from menus shown in the target language. The picture could then be incorporated into a piece of word processed text either describing the meal, or perhaps laid out as a menu, with a suitable selection of phrases like 'service charge not included'.

Using smArt to create a meal

Languages centre, rather than in the IT rooms.

The difference between *Gemini* and other pairs games is that it's possible (and extremely easy) to create your own files. Here, we created a game for matching numbers with the words for the numbers (like 10 and dix).

The use of *Gemini* (playing it, rather than creating files), contributes little to the National Curriculum IT statements, (except possibly comparing the computer method of learning numbers with the conventional method), but does contribute significantly to Language teaching. It is an interesting way to learn numbers and works very well as a whole class activity when projected onto a large screen with the video projector I mentioned last month.

We felt that, of the four strands of Humanities (Geography, History, RE and Sociology) Geography could use the half term slot most effectively. It is surprising how many 12-year old students could not locate major cities, rivers or mountains in the British Isles.

Software

As Britain is one of the topics covered in Key Stage 3, and a map of Great Britain would be required by all students, we elected to develop some software specifically aimed at fitting names to places.

As this was to be a one-lesson topic, the software had to be very easy to use. We chose *smArt* as all of the students had used it in Modern Languages and so were familiar with the concept. Two files were produced: one physical and one political. The IT statements covered are limited, and were duplicated in Modern Languages, but from a Humanities point of view, they are invaluable as the lesson forms the basis of further Geography lessons.

The National Curriculum for Geography requires the students to have knowledge of 13 rivers worldwide. This is an excellent opportunity to use a database and for this I now use *Advance*.

For the top students, they create the entire database themselves, including entering the fields. The slightly less able are provided with the file created but with no records in place, just the fields. For those less able still, I give them the database with just a few items from some of the records still to be inserted. Information is looked up either in an atlas or from the CD-Rom Hutchinsons Encyclopedia.

Having completed the database, they are shown how to sort it into different orders, and to make a couple of searches. Printouts are made of the whole database as entered, after sorting and after a search. From beginning to end, this can be done in three 70 minute sessions, but only just.

Creating a database, adding records, sorting, searching, saving, loading and printing addresses IT statements 1a, 2b, 3c, 4c, 5e and possibly 3a, 5c and 6c, depending on how complete the database was and what additional teaching was provided on the subject.



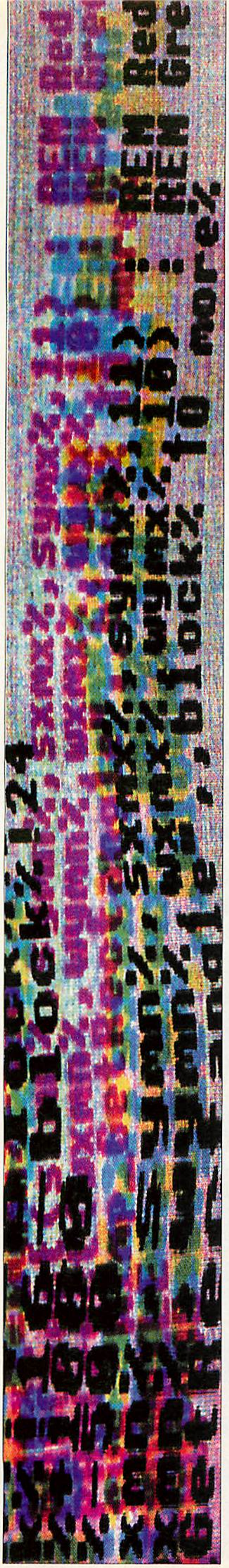
Faces in smArt

Information Technology Statements of Attainment

To achieve a level, each student should have at least two pieces of work showing evidence of meeting the criteria. Please note that not only should the finished piece of work be available, but also evidence of the development of the work (in other words, work at various stages of completion).

Communication	Work with a computer using conventional or other keyboards. ✓ smArt/Impression ✓ Database ✓ Climatographs — 1a	Use computer-generated pictures, symbols, sounds or phrases to communicate meaning. ✓ smArt/Impression ✓ Climatographs — 2a	Use IT for the storage and retrieval of information. ✓ smArt/Impression ✓ Database ✓ Climatographs — 2b	Use IT to create, amend, retrieve, develop, organise and present information. ✓ smArt/Impression ✓ Database ✓ Climatographs — 3a 4a	Use IT to combine, organise and present information in different forms for specific purposes. ✓ smArt/Impression ✓ Climatographs — 5a	Use IT to combine and organise different forms of information for presentation to an audience. ✓ smArt/Impression — 6a	Select software and use it to produce reports which combine different forms of information to fulfil specific purposes for a variety of audiences. ✓ smArt/Impression — 7a
Information Handling	Collect information and enter it into a database. Select and retrieve information from the database. ✓ Database — 3c	Amend and add information an existing database. Check its plausibility and interrogate it. ✓ Database — 4c	Use a software package to create a computer database so that data can be captured, stored and retrieved. ✓ Database — 5c	Identify advantages and limitations of data-handling/graphics programs and recognise when these offer solutions to a problem of data handling. ✓ Database ✓ Climatographs — 6c	Select and interrogate a computer database to obtain information needed for a task. Know when it is appropriate to use a software package rather than another means of information handling. — 7d 7e	Select and use software to capture and store data, taking account of retrieval, ease of analysis and the types of presentation required. — 8b	Evaluate a software package or computer model, analyse the situation for which it was developed; assess its efficiency & appropriateness and suggest refinements. — 9a
Modelling	Use a computer model to detect patterns and relationships, and how the rules governing the model work. — 4e	Use IT to explore relationships and patterns and to form and test simple hypothesis. ✓ Climatographs — 5d	Investigate and assess the consequences of varying the data or the rules within a simple model. — 6d	Design, construct and use a computer model of a situation or process and construct computer procedures involving variables. — 7b	Design a successful means of collecting information for computer processing. — 8a	Use software to represent a situation or process with variables, and show the relationship between them. — 8d	Design, implement and document a system for others to use. Decide how to model a system, and design, implement and test it. Justify methods used and choices made. — 9b 10a
Measurement and Control	Talk about ways in which equipment such as toys and domestic appliances respond to signals and commands. — 1b	Give a sequence of direct instructions to control actions. — 3b	Develop a set of commands to control the movement of a screen image or robot. Understand that a program is a series of instructions followed in sequence. — 4b	Understand that computers can control devices by a series of commands and appreciate the need for precision in framing commands. — 5b	Understand that devices can respond to data from sensors. — 6b	Understand that the results of experiments can be obtained over specific periods or at a distance using data- logging equipment. — 7c	Construct a device which responds to data from sensors. Explain how they have made use of feedback when implementing a system. — 8c
Applications and Effects	Review their experience of IT and consider applications in everyday life. Compare with other methods of doing similar tasks. — 3d 4f	Understand the need to question the accuracy of displayed information and that results may be affected by incorrect data entry. — 4d	Understand that personal information may be held on computer which is of interest to themselves and their families. ✓ Database — 5e	Review their experiences of using IT, consider other applications and their impact on everyday life. — 6e	Understand that dangerous or costly investigations, or those not easily measured, can be simulated by IT. — 7f	Understand why electronically stored personal information could be easier to misuse than other forms. Understand the effects of inaccurate data in files containing personal information. — 8e 9c	Discuss and show understanding of the environmental, ethical, moral and social issues raised by IT. — 10b

Possible statements addressed this month : ✓ smArt/Impression ✓ Database ✓ Climatographs



Back to Basics

In part seven of his series on Basic programming, Mark Moxon explains procedures and functions, and why they are so useful

This month it's time for another really important concept in Basic: procedures and functions. These two constructs form the basis for clean, easy to read and efficient programs, so it's worth spending quite a lot of time getting used to the ideas involved. I'll be looking at procedures now and functions next month.

As always, the best way to explain a new concept is to present an example: have a look at Listing 1. Although it might seem short for what it does, this listing implements a very basic word processor. Run the program (off the cover disc) and the screen will clear. At the bottom of the screen is a dashed line: below this is the editing areas. Above the line is the actual document.

Use the keys A and Z to move the star up and down the left-hand side: this star is the cursor showing the current line. At any time, press E to enter edit mode. A question mark will appear at the bottom of the screen, and you can type in any text you want, up to a maximum of 75 characters. When you press RETURN, this text appears on screen.

If you want to right-justify some text, simply position the cursor on that line, and press R; if you want to centre a line, position the cursor and press C; finally, to left-justify a line, press L.

How it works

Pretty simple stuff, but not too bad for such a short listing, and you can see how it could be extended. So, how do procedures come into all this?

A procedure is simply a block of code with a name. The procedure is defined using the DEF PROC command, as in lines 21, 29, 35, 40 and 45; this defines a procedure as the block of code between the DEF PROC and the next ENDPROC, so PROCedit, defined in line 29, is the name given to the code between lines 29 and 33.

If you have a look at the listing, you will see that there are five procedures in the program: PROCmove, PROCedit, PROCright, PROCcentre and PROCprint_line. The way I have written the program, these blocks of code move the cursor, allow you to edit a line, right-justify a line, centre a line, and print a line respectively.

If you have a look at the start of the program, you can see that after all the variable definitions comes a REPEAT-UNTIL loop, which contains a CASE construct. This CASE statement checks to see which key has been pressed, using the GET$ command (which is explained below), and depending on the key, calls the correct procedure.

Calling procedures

When Basic sees a command like PROCedit, it simply executes the block of code defined by DEF PROCedit. This makes the program really easy to understand. Looking at lines 10 to 17 (the CASE construct), it's easy to see that the program is checking the keypress, and if it's A or Z, it moves the cursor; if it's E, it edits the line; if it's R, it right-justifies; if it's C, it centres; if it's L, it simply prints the line normally. Assuming our procedures are written correctly, the program does what we want.

Arguments

Apart from making your program easy to follow, which is obviously important, procedures allow you to create a block of code to do a certain job, and then simply call this by name anywhere in the program, so you don't have to copy out the same piece of code again and again. An example of this use of procedures is PROCmove in Listing One.

When we want to move the cursor, we need to remove the old star, change the variable which contains the position of the cursor (row%), check that we haven't fallen off the top or bottom of the screen, and then print a star in the new position.

Now all of this is the same regardless of which way the cursor is moving, except for the changing of row%. So wouldn't it make sense to collect all this code together under one name, and call it from two different places in the program? Too right, it would.

The way that we get around the problem of knowing which way to move the cursor is to pass a value to the procedure when we call it with PROCmove. We do this by including the value inside

brackets after the name of the procedure, so to move the cursor down we use PROCmove(1), and to move it up we use PROCmove(-1).

In the definition we use DEF PROCmove(dir%), which means that the variable dir% will be assigned either 1 or -1, depending on whether the procedure is being called in line 11 or 12. Inside the procedure, all we need to do is add dir% to row%, and row% will be increased or decreased as we require.

A similar method is used with PROCprint_line, which takes the argument indent%. Thisproceedure prints out aline to right justify and centre gives the number of spaces the line should be indented from the left-hand side of the screen, so all PROCright and PROCcentre need to do is work out this value from the length of the line, and call PROCprint_line.

To left justify, we simply call the procedure with a value of 1.

Listing 1

```
REM >Listing1
:
ON ERROR REPORT:PRINT " at line ";ERL/10:END
MODE 0
DIM array$(28)
row%=0
PRINT TAB(0,29);STRING$(75,"-")
PRINT TAB(0,0);"*"
REPEAT
 CASE GET$ OF
  WHEN "Z","z":PROCmove(1)
  WHEN "A","a":PROCmove(-1)
  WHEN "E","e":PROCedit
  WHEN "R","r":PROCright
  WHEN "C","c":PROCcentre
  WHEN "L","l":PROCprint_line(1)
 ENDCASE
UNTIL FALSE
END
:
DEF PROCmove(dir%)
PRINT TAB(0,row%);" "
row%=row%+dir%
IF row%<0 THEN row%=28
IF row%>28 THEN row%=0
PRINT TAB(0,row%);"*"
ENDPROC
:
DEF PROCedit
INPUT LINE TAB(0,30);array$(row%)
PRINT TAB(0,30);STRING$(75," ")
PROCprint_line(1)
ENDPROC
:
DEF PROCright
indent%=75-LEN(array$(row%))
PROCprint_line(indent%)
ENDPROC
:
DEF PROCcentre
indent%=INT((75-LEN(array$(row%)))/2)
PROCprint_line(indent%)
ENDPROC
:
DEF PROCprint_line(indent%)
PRINT TAB(1,row%);STRING$(75," ")
PRINT TAB(indent%,row%);array$(row%)
ENDPROC
```

There are a few points which have not been covered which are used in Listing 1, and before we move on it would be wise to cover them, just so you understand the program fully.

The first new concept is the expression GET$. When this is evaluated (for example in the assignment A$=GET$, or in a CASE statement as in line 10), the computer waits until you have pressed a key. The expression is then evaluated to a string containing the character you pressed. So, if the computer comes across the line:

```
A$=GET$
```

and you press the U key, then A$ will have the value "U".

The next concept is that of multiple WHEN choices, as in lines 11 to 16. If a WHEN statement is followed by a list of matches, separated by commas, then if any one of these choices matches the expression in the CASE line, then that line is executed. So, in Listing One, it doesn't matter if you press capital Z or lower case z, the program will still call PROCmove to move the cursor down a line.

New concept

The final new concept is that of INPUT LINE, as used in line 30. Remember how, with the normal INPUT command, you could enter multiple values separated by commas? In other words, the line:

```
INPUT a,b,c
```

would accept the input '1,2,3', asigning a=1, b=2 and c=3. However, this creates a bit of a problem with strings. If you have a line

```
INPUT A$
```

and type in 'Hello, my name is Colin', then A$ will only be assigned the value "Hello", as everything after the comma will be stripped.

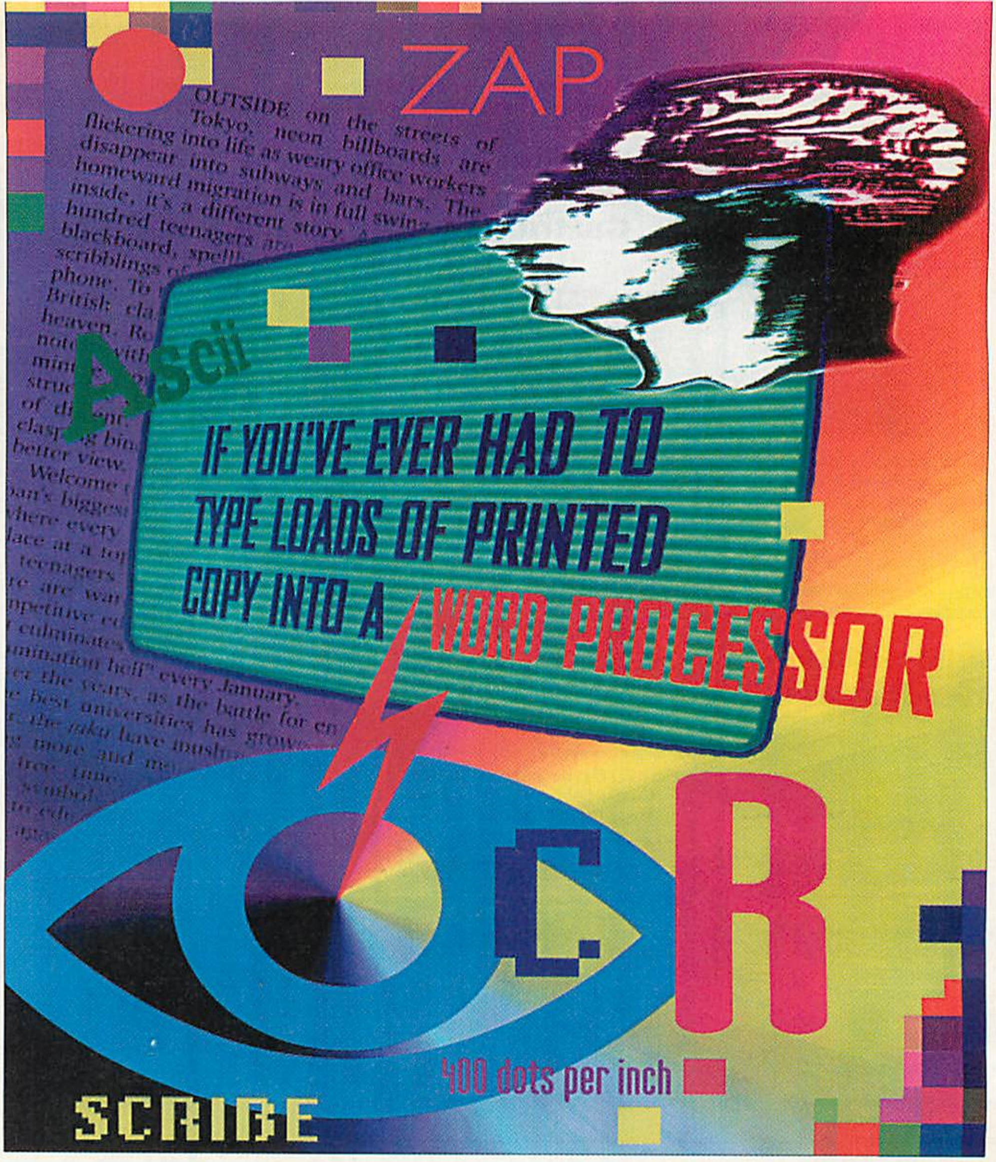
However, INPUT LINE (which behaves in exactly the same way as normal INPUT) doesn't suffer from this problem, and will take the whole string as input. Obviously with our word processor we want all the input, and so have to use this new form.

That wraps it up for this month: next time it's on to functions and more about procedures. Au revoir.



Learning to read

In his final article, Robin Barnes explains how his Scribe OCR application manages to recognise letters using neural networks



Last month I explained what neural networks are, and examined the mathematics involved in modelling them. In this article I will concentrate on how neural networks can be implemented, and how they can be put to practical use in recognizing text.

The first neural networks were constructed in the sixties, using electronic components; however the complexity of the connections between nodes severely limited there size. It was only with the advent of fast and cheap digital computers in the late seventies and early eighties that any progress was made. Computers can model neural networks mathematically, representing the states, thresholds and links between neurons as numbers stored in blocks of memory. They are good at performing simple operations quickly, and the mathematical model of a network is easily broken down into such simple operations.

Scribe nets

When designing the networks for *Scribe*, the major requirement was speed. Evaluating and training the networks using Basic would have been far too slow, so Arm code was the only way to make the networks fast enough.

The type of network implemented in machine code is a four layer, generalised delta rule net. The algorithms were designed to cope with varying numbers of input, hidden and output layer nodes.

I determined the number of nodes in the input layer by the way characters would be presented to the net. I decided to divide each letter into an 8 by 8 grid of cells, and to assign each node in the input layer of the network to one of these cells. This fixed the number of input layer nodes at 64.

The generalised delta rule network produces a specific set of output layer states for a given pattern of input layer states, and I decided to assign each character presented to the net its own output layer node. The network would be trained so that only this node would be activated when the letter was presented as the input. Consequently the number of output layer nodes is determined by the number of letters the net has to recognise.

Unfortunately there is a maximum limit on the number of patterns a network can store, independent of its size; experiments showed that the maximum number of letters that a network could store was about thirty two. This is hopelessly inadequate for optical character recognition, and is only just sufficent to recognise all the letters of the alphabet, let alone discriminate between upper and lower case. The only way that *Scribe* could recognise more letters was to use several different networks, trained to recognise different groups of letters.

Scribe will recognise 96 different characters divided into three groups of 32. Deciding to which network a character should be presented proved to be a difficult problem. Trying all three nets in turn was both slow and inaccurate; since each network is only exposed to the group of characters it has to recognise, it can incorrectly identify a character from a different group as one it has stored.

The solution was to use another network to try and determine which network a character should be presented to. This filter net is trained to recognise whole groups of letters, but it does not have to distinguish the shape of individual letters, only the general features that differentiate

THE MACHINE CODE

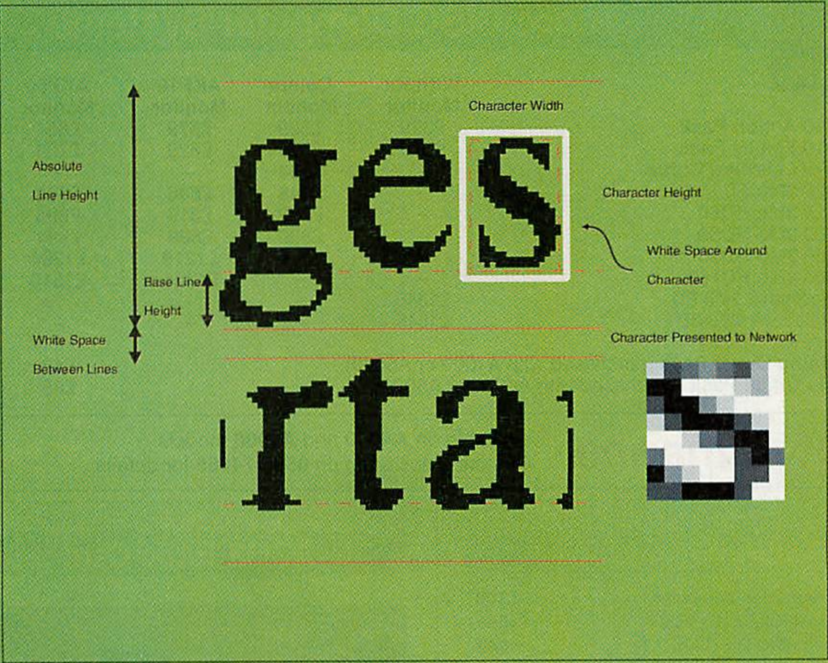
Arm chips are good at performing simple mathematical operations on 32-bit integers. Unfortunately the mathematical model for a neural net assumes that a net can be represented by real, or floating point numbers, between 0.0 and 1.0. A compromise is reached by multiplying the small real numbers by a much larger integer to produce another integer. This can be manipulated with machine code and converted back to a real number by division at the appropriate time. Unfortunately, the integer is only an approximation to the real number, as the number is rounded off by the conversion, and consequently the precision of the mathematics and the corresponding accuracy of the result will suffer.

By representing numbers as 32-bit integers, the state of one node can be stored in a single four-byte word, reducing the memory requirements for storing the network.

The Arm chip can perform the simple operations, such as adding, subtracting, and multiplying two numbers together, that are vital for evaluating networks. It cannot, however, divide or perform the calculations needed to find the activation function of a node. Instead, a look-up table is used, which contains the calculated activation function for certain values.

The machine code can take the two values closest to the correct value function and interpolate between the two to form a reasonable approximation to the function.

The coding of the algorithms is too complicated to explain in detail here, but the end result provides a reasonable approximation to the mathematical model.



it from letters in another group. Suprisingly the network can identify patterns within groups of letters that humans cannot, and the groupings of letters can be entirely arbitrary. *Scribe* then determines which group a character belongs to by dividing its ASCII code by 32.

Scribe network files record information on four networks: the filter network and the three letter networks. Each time *Scribe* tries to identify a letter it presents it to two networks, first to the filter net and then to the appropriate letter network.

Extracting characters

Before the neural networks can be used to recognise text, the individual characters must be extracted from the scanned sprite. To ensure that *Scribe* was fast, I only used a very simple algorithm.

First *Scribe* divides the image into lines of text. Starting at the top of the sprite, the program examines each pixel row. When it finds a row containing some black pixels, it marks it as the top of a line. The program continues to scan until it detects the next row of all white pixels, which is marked as the bottom of the line.

The program also tries to find the base line of a character by calculating the percentage of black pixels along a row. Rows in the middle of the text line will have a high percentage of black pixels, but rows that only intercept the descenders of characters will have a much smaller relative percentage. The last row of pixels to have a percentage above a minimum threshold is marked as the base line.

Individual characters are found by examining columns of pixels within each line of text. The first column to contain a black pixel is marked as the left hand edge of the character, the next column of all white pixels is marked as the right hand edge. Spaces are found by counting the number of white columns between characters, and dividing by the width of a space.

Finally the program locates the absolute top and bottom of the character by examining the rows of pixels that lie between the left and right hand edge of the character, scanning from the top and bottom of the text line. The rows and columns found define a box of pixels that contains the letter. It usually contains many more pixels than the 8 by 8 cell used by the networks. Consequently *Scribe* scales the box by averaging its contents using a process that is very similar to the anti-aliasing used to display outline fonts.

By scaling all the characters, *Scribe* can cope with any size of lettering. However the scaling process cannot account for the different sizes of characters within a font. To the network, a lower case 'o' appears very similar to upper case 'O'. Consequently the input layer of the networks contain three additional neurons that are set according to the relative vertical positions of the top and bottom of the character, and the width to height ratio of the letter. For Scribe to 'see' a character it must be surrounded by a box of white pixels. Similarly, text lines must be separated by rows of white pixels.

The future

Scribe was an experiment in neural network computing, and demonstrates only one of the practical applications they can be used for. Even the simple networks described here are remarkably effective at solving the complicated problems involved in teaching a machine to read, a task that has traditionally taxed both computers and programmers alike. Neural networks can be used for computer vision, speech recognition, data prediction, and a whole range of problems that conventional programming methods would find insoluble.

Above all, *Scribe* demonstrates that neural networks, are a practical proposition. In the future, neural networks are likely to have as profound effect on the relationship between man and machine as the micro-processor has had today.

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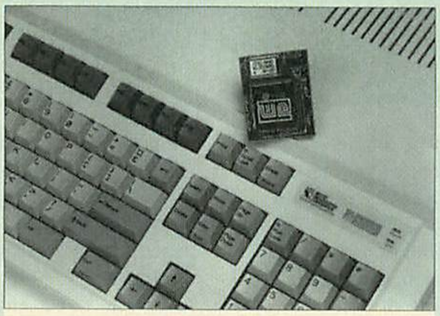
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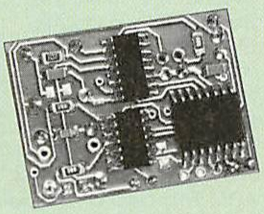
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The Multiscan enhancer is for use with monitors with composite sync inputs, whereas the VGA enhancer is used with VGA, SVGA monitors with separate sync inputs. (A300 series models may require modification for VGA enhancer).

- Multiscan VIDC Enhancer £19
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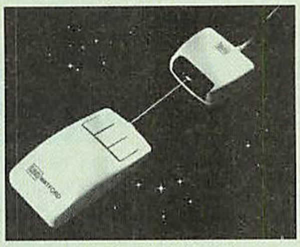
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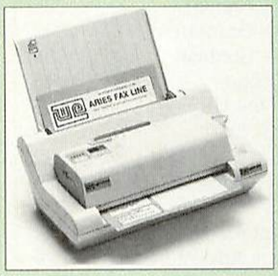
Note: Scan256 is not suitable for A3010/A3020 or A4000 computers.

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(available while stocks last)

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- microprocessor control
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- 17" high resolution FST colour display
- 0.28mm dot pitch, non-glare tube
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- complete with connecting cable (15pin VGA)

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- 17" high resolution FST colour display
- 0.28mm dot pitch, non-glare tube
- digital controls with LCD panel

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- 17" high resolution colour display
- 0.28mm dot pitch, non-glare tube
- 29KHz to 75KHz horizontal frequency
- front panel controls
- complete with connecting cable (15pin VGA)

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Cables

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Please note that cables are not supplied with the printer sharers, but are available from £5 each. Check when ordering which are required.

24hr Credit Card Order Line

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• Brother HL10-DPS	10ppm	£1435
• Canon LBP4 Lite	4ppm	£478
• Canon LBP4 Plus	4ppm	£639
• Canon LBP4 U	4ppm	£359
• Canon LBP8 Plus IIIR	8ppm	£1420
• Canon LBP8 IV 600dpi	8ppm	£932
• Epson EPL4300	4ppm	£520
• Epson EPL5000	6ppm	£435
• Epson EPL5200	6ppm	£489
• Epson EPL7500PS	6ppm	£1135
• Fujitsu VM600	6ppm	£539
• HP LaserJet 4L	4ppm	£456
• HP LaserJet 4ML	4ppm	£757
• HP LaserJet 4P	4ppm	£737
• HP LaserJet 4MP	4ppm	£1047
• HP LaserJet 4	8ppm	£998
• HP LaserJet 4M	8ppm	£1369
• HP LaserJet 4SI	16ppm	£2199
• HP LaserJet 4SIMX	16ppm	£3325
• NEC Silentwriter S62P	6ppm	£883
• NEC Silentwriter S102	6ppm	£914
• NEC Silentwriter 290	8ppm	£1125
• NEC Silentwriter 290P	8ppm	£1449
• OKI OL410ex	4ppm	£585
• OKI OL400ex	4ppm	£418
• Panasonic KX-P4410	5ppm	£445
• Panasonic KX-P4430	5ppm	£579
• Panasonic KX-P4440	11ppm	£535
• Panasonic KX-P4455 PS	11ppm	£1249
• Star LP4 Postscript	4ppm	£759
• Star LS5	5ppm	£449
• Star LS5 EX	5ppm	£548
• Star LS5 TT	5ppm	£739
• Star LP8 III Postscript	8ppm	£1125

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• Canon LBP4 / Star LP4 Toner	£52
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• Epson EPL4100 Photoconductor Unit	£89
• Epson EPL5000/5200 Toner	£89
• Fujitsu VM600 Toner	£89
• Fujitsu VM800 Toner	£109
• HP LaserJet IIP/IIIP Toner	£48
• HP LaserJet III/IIIP Toner	£58
• HP LaserJet 4/4M Toner	£72
• HP LaserJet 4L/4ML Toner	£55
• NEC Silentwriter Toner	£84
• Panasonic KX-P4410/4430 Toner	£22
• Panasonic KX-P4410/4430 Drum	£109
• Panasonic KX-P4410/4430 Developer	£79
• Panasonic KX-P4451/4455 Toner	£19
• Panasonic KX-P4451/4455 Drum	£93
• Panasonic KX-P4451/4455 Developer	£80
• OKI OL400/OL800 Toner	£18
• OKI OL400e Toner	£17
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• HP Adobe Postscript cartridge - III/IIID	£359
• JetPage Postscript cartridge - III/IIIP	£225
• HP Postcript module - LJ 4	£270
• Lower Paper Cassette Tray - IIIP	£115
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• 500sht Paper Cassette - LJ4/4M	£205
• LaserJet font cartridges	from £79
• JetDirect cards for LaserJet 4/4M	£359
• Ozone filter for Panasonic KX-P4420	£9
• Ozone filter for Panasonic KX-P4450	£20
• Appletalk interface - LaserJet III/IIID	£135

Laser RAM Upgrades

Memory Upgrades

• Canon LBP4 1Mb RAM		£105
• Canon LBP8 2Mb RAM		£125
• HP LaserJet II/IID	1Mb RAM	£60
	2Mb RAM	£96
	4Mb RAM	£142
• HP LaserJet III/	1Mb RAM	£49
	2Mb RAM	£80
	4Mb RAM	£132
• HP LaserJet 4/4M	1Mb RAM	£69
	2Mb RAM	£75
	4Mb RAM	£159
	8Mb RAM	£299
• Panasonic 4420	1Mb RAM	£59
	2Mb RAM	£89
	4Mb RAM	£149
• Epson EPL4100	2Mb RAM	£120

Star Printers

	Printer	CSF	Ribbon
• LC15	£186	£135	£5
• LC20	£102	£60	£4
• LC100C	£117	£65	£9
• LC24-15	£245	£135	£5
• LC24-100	£140	£69	£5
• LC24-20 MK2	£175	£65	£5
• LC24-200C	£205	£65	£12
• LC200C	£151	£65	£12
• SJ-48	£169	£43	£16
• SJ-144	£434	–	£POA
• XB24-200C #	£324	£80	£12
• XB24-250C #	£389	£139	£12
• ZA200 #	£260	£89	£12
• ZA250 #	£324	£139	£12
• LC24-30	£POA	–	–
• LC24-300	£POA	–	–

• 8K Serial interface - LC20/24-20/200	£52
• Serial interface - XB24/ZA200/250	£52
• Black ribbons for colour printers	£5

NEC Printers

	Printer	CSF	Ribbon
• P22Q	£181	£59	£6
• P32	£235	£59	£6
• P62	£339	£79	£8
• P72	£395	£115	£8
• P90	£577	£115	£8
• Jetmate 400	£169	–	–

• Black ribbon for P20/P30	£6
• Black ribbon for P60/P70/P90	£8
• Colour ribbon for P60/P70/P90	£14
• Colour Option for P60/P70	£59

Fujitsu Printers

• DL1250 dot matrix printer	£315
• B100 inkjet printer	£159
• B200 inkjet printer & CSF	£215
• Ink cartridge for B100/B200	£14
• Ink Refill for B100/B200	£10

Citizen Printers

• 120D+	£93	• Swift 200	£178
• PN48	£179	• Swift 240	£180
• Swift 90	£132	• Swift 240C	£193
• Swift 90C	£198	• ProJet 2	£220

• Swift 24/240 Black ribbon	£4
• Swift 24/240 Colour ribbon	£13
• 120D Black ribbon	£4
• CSF for Swift 24/240/200	£75
• Citizen printer driver for Archimedes	£15

Credit Card Hotline

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Hewlett Packard Printers

• DeskJet 510 mono	£198
• DeskJet 500 Colour	£335
• DeskJet 550 Colour	£398
• DeskJet 310	£169
• DeskJet 1200 Colour	£931
• DesignJet 600	£4999

Accessories

• DJ500 black ink cartridge - std capacity	£16
• DJ500 black ink cartridge - hi capacity	£23
• DJ500 colour ink cartridge	£25
• Black ink refill for DJ500	£10
• DJ1200 black ink cartridge	£22
• DJ1200 colour ink cartridge	£26
• Paintjet black ink cartridge	£17
• Paintjet colour ink cartridge	£27
• CSF for DeskJet Portable	£49
• Carry case for DeskJet Portable	£49
• FX Emulation cartridge (500 mono)	£45
• 256K RAM Cartridge for DeskJet	£69
• WordPerfect font cartridge	£89
• Dustcover for DeskJet 500/550	£6
• Archi printer driver for DJ550C	£15
• Turbodriver for DeskJet/LaserJet (only £39 when purchased with HP Printer)	£42
• 50x A4 Transparencies for DJ (636G)	£40
• 50x A4 Glossy Paper for DJ (636J)	£40
• 50x A4 Cut sheet Paper for DJ (636Z)	£15
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High Quality InkJet Paper
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Integrex Printers

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• ColourJet Series 2	£335
• CSF for ColourJet Series 2	£45
• BetaJet	£185
• CSF for BetaJet	£43
• Black ink cartridge - ColourJet 132	£14
• Colour ink cartridge - ColourJet 132	£23
• 100 A4 Transparencies	£55

Epson Printers

	Printer	CSF	Ribbon
• LX400	£92	£69	£4
• LX100	£115	–	£4
• LX850+	£135	£69	£4
• LX1050	£204	£125	£6
• FX870	£265	£47	£4
• FX1170	£335	£69	6
• LQ100	£122	–	£4
• LQ570	£204	£39	£4
• LQ870+	£359	£39	£6
• LQ1060	£585	£155	£6
• LQ1070+	£310	£69	£6
• LQ1170	£445	£69	£6
• LQ2550	£669	£360	£6
• SQ870	£419	£170	£23
• SQ1170	£560	£155	£23
• SQ2550	£669	–	£23
• Stylus 300	£169	–	£10
• Stylus 800	£199	–	£10
• Stylus 1000	£355	–	£10

• Serial I/F - 0K	£28	Serial I/F - 8K	£75
• LQ100 Tractor Feed			£29
• LQ800/850 Tractor Feed			£69
• LQ2500 Tractor Feed			£90
• Transparencies for Stylus 800 etc			£35

Canon Printers

	Printer	CSF	2nd Bin	Ink
• BJ10sx	£165	£43	–	£16
• BJ200	£244	–	–	£16
• BJ230	£280	–	–	£16
• BJ300	£305	£88	£88	£12
• BJ330	£369	£92	£92	£12
• BJC600	£	–	–	–
• BJC800	£1219	–	–	–

• BJC600 ink cartridge: Black £6 Colour £7	
• BJC800 ink cartridge: Black £16 Colour £20	
• Battery pack for BJ10ex/10sx	£33
• Black ink refill for BJ10ex/BJ10sx	£12
• Turbodriver for BubbleJet & BJC (only £39 when purchased with Canon Printer)	£42

Panasonic Printers

	Printer	CSF	Ribbon
• KX-P1170	£98	£59	£7
• KX-P1123	£124	£59	£7
• KX-P1624	£264	£126	£8
• KX-P1695	£267	£126	£8
• KX-P2180M	£126	£69	£7
• KX-P2123M	£144	£69	£7
• KX-P2124	£215	£89	£7
• KX-P2624 #	£272	£126	£8
• KX-P2023	£158	£	£8

FREE printer lead with every Panasonic printer listed above.

• Dustcover for 80 column printers	£6
• Serial interface for above printers	£46
• 32K Buffer for above printers	£16
• Colour kit for 2180/2123/2124	£37

Printer Stands

• 80 column Perspex printer stand	£14
• 132 column Perspex printer stand	£18
• 80 column Professional printer stand	£16
• 132 column Professional printer stand	£25

Paper & Labels

• 9.5" x 11" fanfold paper - 1000 sheets	£7
• 9.5" x 11" fanfold paper - 2000 sheets	£11
• 9.5" x 11" NCR 2pt paper - 1000 sheets	£21
• A4 fanfold paper - 1000 sheets	£11
• A4 fanfold paper - 2000 sheets	£21
• A4 cut-sheet paper 80g - 500 sheets	£3.50
• A4 cut-sheet paper 90g - 500 sheets	£7
• 90 x 36mm single row labels - 1000	£4.50
• 90 x 36mm twin row labels - 1000	£4.60
• 102 x 36mm single row labels - 1000	£4.70
• 70 x 37mm A4 laser labels - 2400	£15

Printer Ribbons

• Brother M1009/GLP	£2.95
• Epson EX800/EX1000 Black	£6.00
• Epson RX/FX/80/85/800	£3.00
• Epson LX80/LX86	£4.00
• Epson LQ400/550/800/850	£5.50
• Epson LQ1050/2500	£12.00
• Epson LX400/800	£3.50
• Kega Taxan KP810	£6.00
• NEC P2200	£4.50
• Panasonic KX-P1080/81	£7.00

Dustcovers

• BBC Model B/B+	£6.00
• BBC Master 128	£6.00
• Citizen 120D	£6.00
• Citizen Swift 24	£6.00
• Epson LQ400/LX400	£6.00
• Epson LQ570/LQ870	£6.00
• Epson FX80/FX800	£5.00
• Panasonoc KX-P1170/KX-P1180	£6.00
• Panasonoc KX-P1124/KX-P11241	£6.00

Leaving eight-bit behind, nasty Basic error messages, printing from Impression and fading batteries: it's all here

QUESTIONS & ANSWERS

Q Now that you've finally taken the plunge and have decided to cover 32-bit computers only, have you got any advice as to how I can keep in touch with the eight-bit scene, which as far as I am concerned, is still alive and kicking?

J Bannor
Stratford

A Although *Acorn User* no longer caters for eight-bit users, there are still a lot of BBC machines out there, with a lot of dedicated users: I might even go so far as to say that there are no users more dedicated than Beeb owners. Twelve years' loyalty can't be a bad thing.

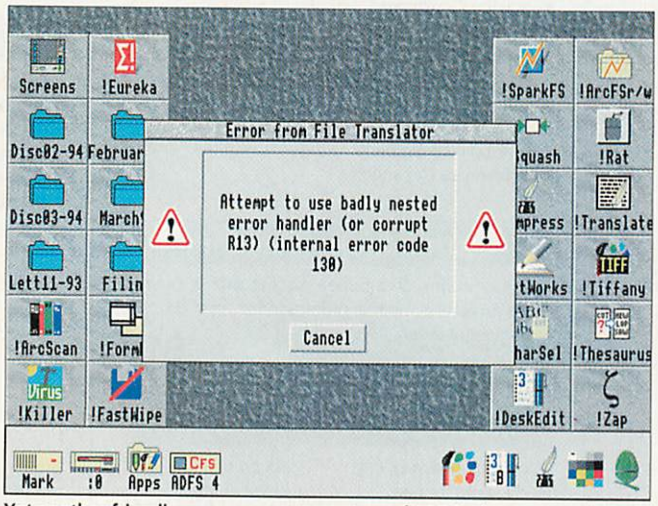
I only know of two publications which put out regular magazines solely for the BBC. The first is Beebug magazine, on (0727) 840303, which sadly will be ceasing publication with the April issue, but there are loads of back issues full of information and programs which are still available.

The second is ByteBack, published by Paul Harvey, 33 King Henry's Mews, Enfield Lock, Middlesex EN3 6JS. Out of the news stand Acorn magazines, *Acorn Computing* is the only one that still caters for Beeb owners: they're on (0625) 878888.

Perhaps the most exciting development in the eight-bit scene is the wide availabtility of public domain software. More and more companies are donating software which they cannot sell any more to the public domain, and there are a number of PD libraries catering for eight-bit software. Here's a selection of addresses:

- **8-bit Software, 17 Lambert Park Road, Hedon, Hull, East Yorkshire HU12 8HF**
- **BBC PD, 18 Carlton Close, Blackrod, Bolton BL6 5DL**
- **Headfirst PD, 97 Chester Road, Southport PR9 7HH**
- **JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT**
- **Mad Rabbit PD, PO Box 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE**
- **Masterdisc, 2 Seaview, Hoylake L47 2DD**
- **Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF62 7EE**

You'll also be glad to know that Acorn User has donated all its 5.25in discs to the Public Domain, including all the special discs such as Calligraphy and the Graphics disc, so if you have these discs and want to pass them round, that's fine. Note that the 3.5in discs are not Public Domain, though.



Yet another friendly error message, courtesy of BBC Basic

Q Help! I've been using my A3010 for a few weeks now, and I've graduated on to hacking around with other people's programs to see how they work. Unfortunately I think I have gone too far with one particular program, and all I get is the error 'Attempt to use badly nested error handler (or corrupt R13)'.

What on earth does this mean? What is R13, and have I permanently damaged it? Can I cause any serious problems with my computer by hacking around with software in this way?

P Arnold
Chichester

A Nothing you type at the keyboard can cause any permanent damage to the insides of your computer, though you may end up corrupting discs or deleting programs if you are accessing storage media in a naughty way.

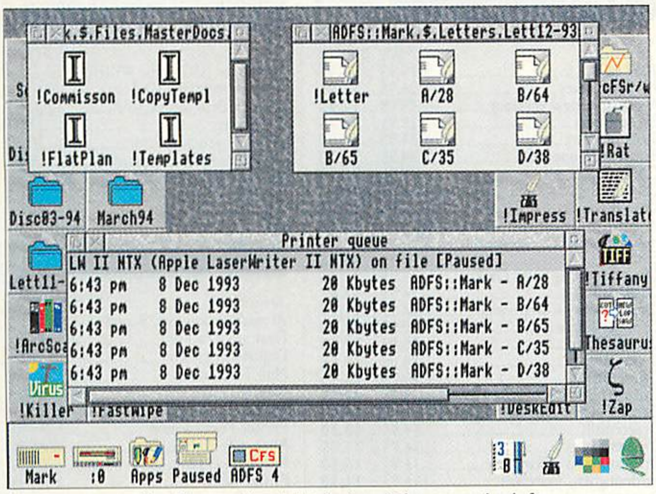
Programming does, of course, require you to follow certain rules, and if these rules are broken you will probably end up with an error message – but don't worry. If you have kept a backup of your program (which every good programmer should do), then you can simply reinstate that version.

The R13 error is a little cryptic, but its explanation is quite simple. When you use the LOCAL ERROR command, the existing error handler is temporarily stored on the stack, and a new error handler is instigated. When RESTORE ERROR is used to reinstate the original error handler, it pulls it off the stack.

However, if you try to use RESTORE ERROR without having used LOCAL ERROR, you get the above error: try it and see.

The 'corrupt R13' part of the message refers to the fact that the Arm register used to point to the stack is R13. Still, it would be nicer to see rather less confusing error messages, don't you think?

Q I have heard that it is possible to print more than one file by selecting them all, and dragging them to the printer icon. I have managed to do this with a selection of files including text files, sprite files and *Draw* files, but whenever I try the same with an *Impression* file, I get the error 'Don't know how to print



You can queue the files on the right, but not those on the left

applications – entry will be removed from queue'.

Why on earth is this, and is there any way I can drag a selection of *Impression* files to the printer?

C Reid
Salisbury

A ***Impression* files are stored as application directories, not files: you'll get a similar sort of message if you try to load an Impression document into *Edit*. As the printer manager does not know how to print applications (imagine trying to print *Maestro* or *Edit* themselves: it's the same situation) it gives this error, and the only way to print an *Impression* document is via the Print dialogue box.**

However, the latest version of *Impression, Impression Style*, can save documents as single files, and the capability to do this will also be built into *Impression Publisher*. These files *can* be dragged to the printer manager and printed, so the answer to your question is easy: upgrade to *Style*.

Q I have just bought a second-hand A440/1, and everything works perfectly except for the configuration options. The clock loses time, and the configuration settings keep changing, without me running *Configure* in the meantime.

I have a feeling that this is down to the CMOS Ram settings, but I read somewhere that the battery that keeps these settings permanent is constantly recharged by the mains supply. Do you think I have a faulty recharger, or is there an easier software solution?

F Hayley
Coventry

A Luckily, fixing the problem of your corrupting CMOS Ram is simple. Open up your computer case, and have a look in the front left corner of the case.

Here you will see a battery pack containing two batteries, and all you need to do is replace these (preferably with a long life battery), and your CMOS Ram will work as normal.

When you switch the computer on, hold down DELETE to clear the CMOS Ram settings to their factory defaults, and that's all there is to it.

The A3000 was the first machine to include a rechargeable battery, and all subsequent models also include one. Only the A300, A400 and A540 models need to have their batteries replaced.

If you've got a problem, drop us a line at Questions and Answers, Acorn User, Europress Enterprise Ltd, Europa House, Adlington Park, Macclesfield SK10 4NP, and we'll do our best to answer.

Customer hotline

Viruses and Acorn Advance

It is a sad fact of life that all computer users should be aware of the risks posed by computer viruses. Quite aside from their usual deliberate intentions of replicating through a system and causing something undesirable to happen, there can also be occasional side effects caused by poor coding of the virus or other factors.

One such side effect, which has concerned a number of Acorn Advance users recently, has been the effects when Advance becomes infected by the Icon virus.

The Icon virus family is a range of viruses, all based on the same original program but using different names, filetypes and doing different things. However much of the behaviour of the virus and a lot of its program remains unaltered from one strain to the next.

Advance looks like one application when you use it. Underneath are four separate applications, all of which are just as susceptible to virus infection as the parent. However, the effects of infection are very noticable.

When an application within Advance gets infected it will usually not run at all (the virus accidentally interferes with the startup, causing loss of memory). There will be no other indication of a virus – just that nothing happened when an application should have started up.

If you experience this behaviour you should check your system with a virus detection/removal tool such as Pineapple Software's Killer. VProtect, supplied with Killer, will detect infected copies of Advance. Pineapple Software can be contacted at 39 Brownlea Gardens, Seven Kings, Ilford, IG3 9NL, tel 081-599 1476, fax 081-598 2343, e-mail sales@pinesoft.demon.co.uk

Using Acorn Advance on a network

We have prepared an application note to assist with installing Advance in a network environment. It is available upon request from: Customer Services (Advance Network A.N.), Acorn Computers Ltd, Acorn House, Vision Park, Histon, Cambridge, CB4 4AE. Please write rather than phoning.

Viewing DOS text files in Edit

DOS text files use a two character sequence consisting of a carriage return (13 in decimal) and a line feed (10 in decimal) at the end of every line. Edit, in common with most text editors under Risc OS, only uses the line feed.

The easiest way to remove the extra carriage returns is:

- Put the caret at the top of the document.
- Check that the title bar is yellow, click within the document if not.
- Press F4.
- Click on Magic Characters and the dialogue box will enlarge.
- Type \x0D in as the search string.
- Press RETURN twice.
- When the Text Found dialogue box appears click on End of File Replace.
- The easiest way to put them back is the same as far as pressing F4. Then....
- Type \n in as the search string.
- Press RETURN once.
- Type \x0D\x0A as the replace string.
- Press RETURN once.

and proceed as above.

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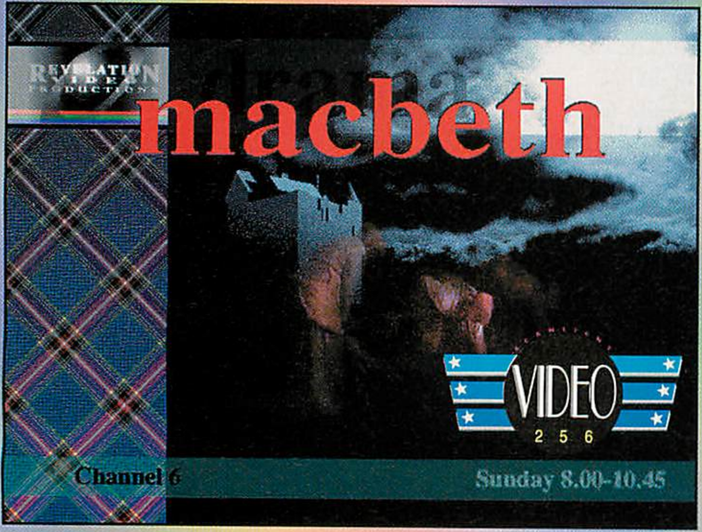
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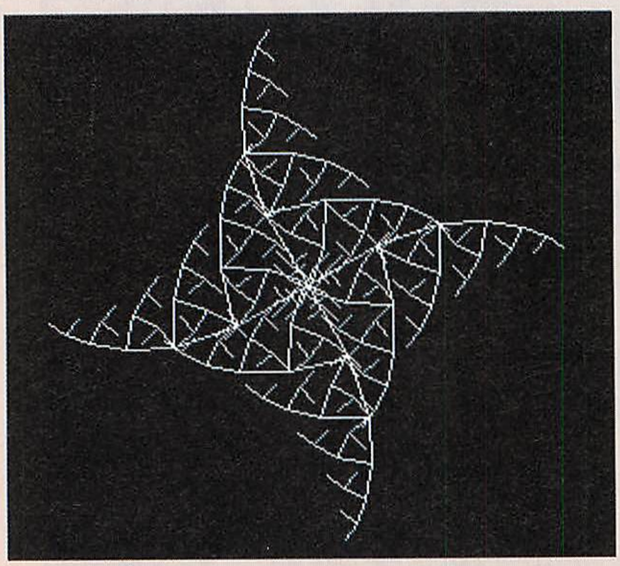


MOVING FRACTALS

We have some exciting new twists to fractals coming up in *INFO over the next few months. Tim Jones supplies the first – an elegant real-time fractal demonstration that is mouse-controlled.

In *Fractals* a simple fractal 'bush' is plotted on the screen. The angle at which branches emerge is changed constantly so the bush enters a continuous animated cycle.

At the start the angle between sub-branches is zero so all of them overlap, but move the mouse and see them appear. The angle between offshoots depends on the horizontal position of the mouse, so simply slide it left and right to see the effects.



Because OS_Plot is used throughout you can change the screen mode used – try one that really stretches your monitor. You can also try altering the value of size which is the number of splits at each stage. By default this is 8 but 10 is quite suitable for machines with Arm3.

String is a new version of an old favourite. We're including it because it's quite a quick little Basic ditty and produces a very rope-like effect. Array operations are used throughout for simplicity and speed and many of the variables can be fiddled with for different effects. These include l (the number of sections in the piece of string), s (the size of each section), g (gravity), d (drag: 0=thick string, 1=thin string) and w (wobbliness!). This last value can range from 0 (very stiff) to 1 ('very wobbly and weird' says Tim).

Author: Tim Jones

A BOOT FOR ALL SEASONS

Users of machines with two megabytes or less will be very interested in this very little and very simple utility from Nathan Kidd.

With limited Ram it is often quite difficult to configure your machine into a usable state for different applications – some require lots of font cache whereas some may benefit from large amounts of application space. Games may prefer low resolution modes whilst DTP and design work really require VGA modes.

Nathan's solution to this problem is have a number of boot sequences triggered by different key presses on startup. To this end he has written the small Basic program *!Starter*. This lives in the *!Boot* directory and is run by the *!Run* file: note that you should configure your machine to start up in Basic rather than the desktop.

The structure of *!Starter* is trivial – a key is read using INKEY and a CASE statement used to perform the relevant start-up sequence. In most cases these will simply run different Obey files to change dynamic areas and so on. The simplest way to create these is to set up the configuration you require and save the Desktop boot file. These files may need a little tweaking, but do form a good basis.

Author: Nathan Kidd

ON THE CREST OF A WAVE

We have carried a number of 'wavey' demos over the years, such as Jan Vlietinck's excellent offering back in May 1992. This screen-rippler from Alistair Turnbull is fast enough and pretty enough to deserve its own spot though, as we're sure you will agree.

The screen is first filled with a geometric design. When the pointer appears, click with the mouse to 'raise' the level of the picture at that point. Single high spots can be created, or you can drag the mouse across the screen to form a ridge.

The screen behaves like the surface of a jelly and the ripples from your mouse movements are echoed through the pixels until they finally fade and die.

Much optimisation has resulted in high speed. Alistair even uses the stack pointer register r13 in his 'wibbler' (not a strategy we would recommend, but useful as a last resort when you need just one more register).

His program is fairly straightforward and readers who might like to try their hand at similar demos should read on for a rough outline of how Alistair's program works.

The Mode 13 screen is divided into 40 by 32 chunks (equivalent to characters) and it is just this set of 960 points that are wibbled. Each point has a height (y) and a rate of change of height (dy). The height determines how wibbled a particular block of screen is.

An untouched version of the screen is kept in the unseen screen bank and the y values are used to look up blocks of the original picture for copying onto the visible screen. The size of the y value determines how far away from the original position a section of screen will be fetched.

Two pieces of machine-code are used – one to draw the picture and another to perform the wibbling, evening out the forces between adjacent points and transmitting motion across the screen.

The drawing part is quite straightforward and consists of a simple lookup, according to y values. For added effect, Alistair uses interpolation to double the number of columns from 40 to 80. Each character size block consists of two columns of 8 memory words.

Each column is wibbled individually by calculating intermediate heights between points in the 40 by 32 grid. The picture is only wibbled vertically, so each word poked onto the screen will have been fetched from somewhere in the same word column of the original image.

The wibbling itself is done in several stages. First the grid is processed point by point. Each point, its neighbour above and its neighbour to the left are considered (see Figure 1). The height of point A is compared with that of B above, and the rates of change of A and B are adjusted by a multiple of the differences in their heights; in this way, motion is transmitted. The same is done for A and its left neighbour C. Finally, extra loops are executed to deal with the fringes of the picture.

Row and column 0 are fixed – that is, their rate of change values are zeroed so the waves are contained. Finally, the grid is processed once more and the y values changed according to the corresponding dy values. Each dy is reduced by 1/32 (change fr% to alter this) of each frame so that all waves ultimately die out.

Author: Alistair Turnbull

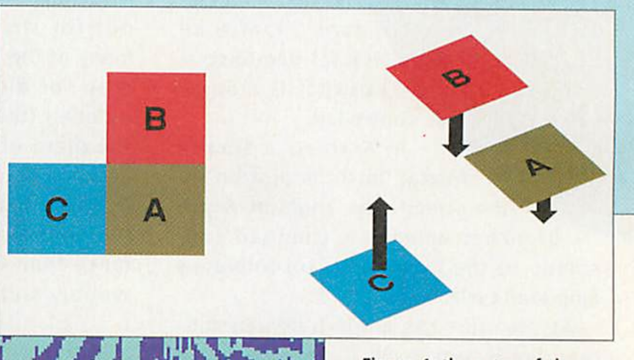
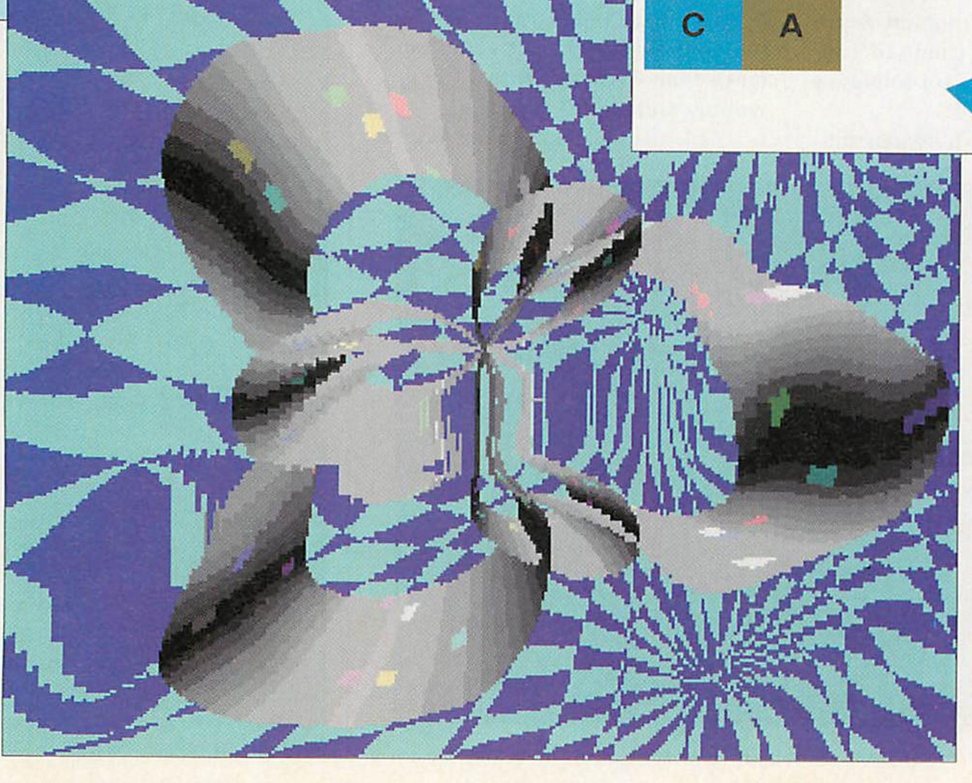


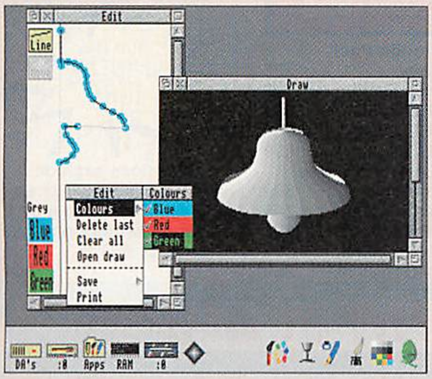
Figure 1: the rates of change of height of blocks A, B and C are affected by their relative heights.



POTTY TIME

Rob Miller's graphics routines from May 1990 provide the basis for this 3D desktop editor by Richard Seago. It allows you to design 3D pots, bells and all manner of shapes by rotating a curve around an axis. Richard describes how to use his creation...

'Pottery has two windows, one in which you design the outline of your shape, and one in which you see what it looks like. Because the program tries to use 256 colours it needs one of these modes to show the solid properly but it will try its best with the *ColourTrans* module in other modes



and for printing (which produces best results with grey on a monochrome printer).

'The left hand side of the edit window contains the functions. The long, vertical, black line is the axis about which the solids are formed. The functions are:

Line – draws a line on the edit window and a three dimensional shape in the draw window

Move – draws a faint line in the edit window and allows gaps in the picture in the draw window

Grey – word changes telling you which hue the currently selected colours will produce on screen

Red, Green, Blue – these select/deselect the red, green and blue component of the shape's colour

'The shape is entered as a continuous path. The path can be started at the top or bottom of the edit window, although the direction should be kept consistent throughout because of the way that the shape is drawn. If the shape is drawn top down, in order to represent it correctly on screen the entire shape must be redrawn.

'This can slow things down for complex shapes so you may wish to turn off continuous update. This option is on the Update submenu which can be called up from the display window. There are no such problems if you draw bottom up, because the shapes are drawn in order that you might look at them from slightly above.

'Each segment has a separate colour characteristic which is set before it is drawn. However, this can be changed by clicking with Menu on the point before the segment you wish to change. The selected segment will turn orange, and the colour may then be changed via the Colour submenu.

'The last point in the path may be deleted or the entire path cleared. You may also drag any point with Adjust to change its position. If the program gets behind with updating the sprite, or you have turned off the continuous update option, you will have to choose Update from the Draw menu to see the shape properly – this may take a few moments. The sprite is also completely redrawn when you click Select on the iconbar icon. Adjust will open the edit window only.

'The program can load and save in its own file format and 3D shapes generated can be saved as sprites. The sprite will be in whatever mode is currently in use. Another method of inputting shapes into *Pottery* is from a shape description file in the form of a text file. This allows greater accuracy and may contain the following keywords:

Shape – This keyword should always be the first word of the file to mark the file as a *Pottery* file.

gcol <colour> – This allows you to set the colour of the path segments up to the next gcol. The <colour> parameter should be one of the following: grey, white, magenta, cyan, yellow, green, blue, red, clear or black (has the same effect as a move).

move xxx,yyy – This moves the drawing cursor to the point xxx,yyy. It is up to the user to ensure that the points lie within the viewing area, as no error is produced otherwise.

draw xxx,yyy – This draws from the previous cursor to the point xxx,yyy.

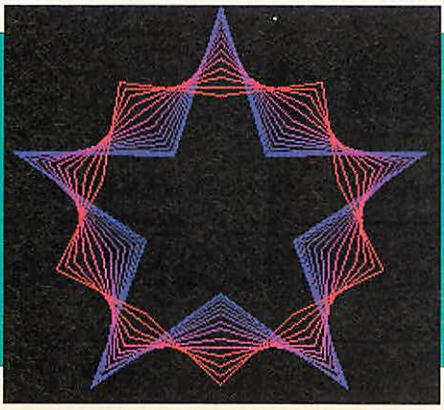
'All these commands (and parameters) are case sensitive – if they are not correct they will be ignored as comments, as will any other unrecognised lines. An example text file is included on the disc.

'The print option uses Risc OS printer drivers. The printing of the shapes is not done from the sprite but from the outline, so the best image possible should be produced on all printers.

'If you should change modes within the desktop, *Pottery* will take a few moments to readjust, making sure that the sprite appears in the same size and in the best colours possible. It will also warn you on entering (or starting up in) a non-256 colour mode that it cannot do its best when drawing the shape.

'The program is slightly naughty in that it uses RMA space to hold the sprite. This has never caused me any problems, and I don't see why it should. I can only say that the best way to get to grips with *Pottery* is to try it. The sprites produced can be very effective.'

Author: Richard Seago



A quickie now from Danish doodle-man Jan Vibe. *Spiral* is a never-ending, ever-expanding spiral design which uses a grey-scale palette so lines can appear, grow and fade. Finally, *Star* produces a pulsating star design using a red-to-blue colour scale for effect.

Author: Jan Vibe

PATCHING THE WIMP (AGAIN)

After seeing our series of patches over the few months, Erwin Gerrits has been inspired to develop his own to replace the system font in the desktop with an outline font. This turned out to be quite tricky and involves quite a number of convolutions.

'I had first written a small routine to intercept the WriteC vector. This would paint the character in a font rather than the system font. This routine proved far too slow, so I tried patching the WindowManager.

'The WimpPatch uses a system variable, called Desktop$FontHandle, to set the fonthandle. This variable can be set by setting the variable Desktop$Font and running the short Basic program *SetFont*. This way, the font can easily be changed, without any hassle with handles and changing patches.

'To create the patch, first save the *WindowManager* using *RMSave, under the name of *OldWimp*, and run *WimpPatch*. This should save the patched *WindowManager* under the name *NewWimp*. Now exit the desktop, set Desktop$Font to a suitable font name (e.g. Homerton.Medium), run *SetFont*, RMLoad *NewWimp* and re-enter the desktop.

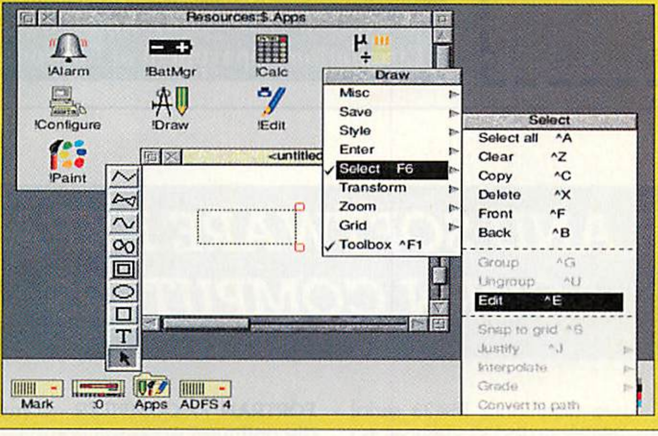
'If you've done all this correctly you should have nice anti-aliased text. To install this on boot up, change your normal boot file *!Boot* to an Obey file *!Boot2*, create a new obey file *!Boot* with the following lines:

```
Set Desktop$FontHomerton
.Medium
Run ADFS::bootdisc.$.Wim
p.SetFont
RMLoad ADFS::bootdisc.$.
Wimp.NewWimp
Desktop !Boot2
```

Change the font name and pathnames as appropriate.

'I had a number of problems in an early version of this patch, most of which I hope I've fixed. However, there are still a few anomalies:

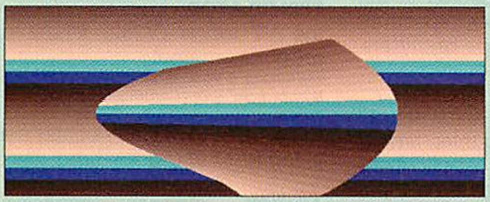
- Radio icons which have text printed at the wrong location have their right bits set, so text is printed on the right bounding box leftward (number of chars*16 wide). These radio icons were created with the sprite on the left-hand side and the text on right-hand side. Then the icon was horizontally scaled so that the text appears next to the sprite. Now, when the text is mostly smaller than the system font, the text and sprite don't line up anymore.
- Menu items with key short-cuts can't be displayed neatly as the routine has no knowledge whatsoever of what it prints – ideally the keys should be right justified
- Sometimes the font colours appear to be wrong. This only happens with non-filled icons that have their background colour (which you couldn't see) set to the most awful colour. Now, with the anti-aliasing, they show. And how!
- It is possible that sometimes the font handle becomes unknown (after a SHIFT-BREAK for example), and no fonts are printed. Simply double-click on *SetFont* (if you can find it!) to reintitialise the handle.
- Changing mode can have nasty effects. The small application *ModeFont* sits quietly in the task manager's window, waiting for a mode change, to change the font handle for the new mode. Try switching to Mode 1 without this application running...



Author: Erwin Gerrits

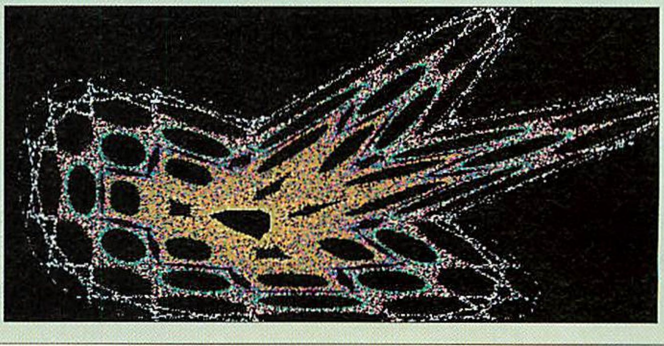
One-line corner

We realise that since the introduction of the cover disc and loss of the yellow pages, one-line programs have lost a little of their charm. However we hope you still appreciate them for what they are – mini-marvels of programming! Richard Anderson's *StarBursts* is typical of its genre, a creator of multi-coloured spiral graphics. We enhanced Richard's original ditty so that it removed the starbursts after a short time, which gives a much more pleasing display and the basis for a possible screensaver.



Ginger is a one-line fractal which Jan Vibe says produces an unusual Gingerbread Man (are the Danish drug laws a little too lax we ask?). I think the image produced looks more like a certain cartoon rabbit. Any other suggestions on postcards please.

50Hz by Alistair Turnbull takes its name from its screen update rate. A good while ago we carried a one-liner that worked on a similar principle to this, but Alistair's version is a good deal better with a surprisingly 3D look about it.



SQUARE ROOTS

In last July's issue, we carried a program by Garry Hill called *WormHole*. This created weird and wonderful patterns by 'sucking' particles through a random point on the screen. One of the core routines in this program calculated the hypotenuse of a triangle with a fixed point square root routine. Garry also sent in a program which tested this routine and as we often receive requests for machine code maths routines we thought *SQRtest* worthy of inclusion in its own right. Garry explains.

'To create the WormHole effect I had to write a routine to calculate the hypotenuse of a triangle; this is done using a large look-up table. The division routine is a slightly modified version of that given in 'Archimedes Operating system – A Dabhand Guide' so thanks to Dabs Press for that. I have no real idea how it works so I could not really speed it up at all.

'I have tried to keep as much accuracy as possible in the fixed point arithmetic. The basic accuracy is defined by setting acc% at the start, which not only increases the accuracy but also the length of the look-up table used by sqr and hence the time taken to compile the code. I have used a maximum value of the shift as 20 since the values of dx and dy should easily stay within ±1024.

'Errors do occur when calculating the hypotenuse and these tend to result in either stationary points littered around or extremely fast moving ones. These can mess up the position of the convergence point, as this uses the mean position of the points to work around, and points somewhere in the region of Wales tend to shift the mean value somewhat to one side. These errors only occur about once every 100,000 points, so they are not significant (I hope).

'*SQRtest* is the routine I used to test the hypotenuse routine. The program is a bit messy but it shows the general accuracy of the routines.'

Author: Garry Hill

WALKTHROUGH – Coral, by Brian Cooke

The initialisation of the program is very simple – a mode is selected (if you do not have a VGA monitor, change this to mode 12) and the SWI number of the call ColourTrans_SetGCOL is calculated. The palette is set up to be a sequence of reds with a dark blue background. The coral is then plotted with an initial call to PROCnode. This takes five parameters – x and y co-ordinates, a radius, a retry and a colour (used as a percentage [of 256] of red).

The first thing PROCnode does is plot a circle at the given x and y co-ordinates. It does this twice, once with colour 8 in OR plotting mode (GCOL 1,8). This is to plot an 'invisible' ring around the circle to try and prevent future coral encroaching on what has already been plotted.

The second call uses the ColourTrans_SetGCOL to automatically generate dither patterns to enhance the rather limited range of reds available. c<<8 means we'd like c amount of red (from a maximum of 255) and the &100 means use dither patterns.

If the circle plotted is tiny (<2) the routine ends there, otherwise the node is used as a basis to plot some fronds of coral. We're allowed to fail to plot a frond up to 10 times (passed to PROCnode and counted with no). For an arm, a random angle is chosen and the end co-ordinates x1 and y1 are then calculated using simple trigonometry. If this point is 0 (i.e. background) we proceed to plot the arm otherwise the fail count is incremented.

To plot an arm the relative co-ordinates dx and dy are calculated and the width of the arm calculated. A rectangle (actually two - see explanation of the circles above) is then plotted between the current point and the end point. A recursive call is then made to PROCnode with the end-point, a slightly smaller radius and a slightly brighter shade of red. The recursion 'falls out' at the end because we make more and more attempts to plot an arm but fail because the screen is getting more packed. Note that the fail counter no is made LOCAL so the subsequent recursive calls do not trample all over higher level uses of the same variable name.

OK? CORAL!

One thing we're famous for at *INFO is the short Basic program that generates some obscure pattern or fractal. Brian's Coral program falls into the former catageory and almost qualifies as a Jan Vibe-ism (but fails because it's not nearly frightening or hideous enough!).

The program draws random finger-like coral; nothing special there, but it does use a couple of programming techniques to give the illusion of more colours and to try to prevent fronds of coral crossing each other. For these reasons we thought the program worthy of this month's walkthrough.

Author: Brian Cooke



*QUIT

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Please write your name, address and program title on the disc and include a text file containing the same details. And please include a stamped, addressed envelope to ensure your disc's return.

Also, please include instructions, preferably as a simple text file, for each program submitted. At the simplest you should explain what the program does and how to use it. As well as programs we welcome hints, tips, suggestions, ideas for features, questions, answers, applications, requests, short-cuts, patches, bugs, features and comments.

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• Master 128, internal 512 board, internal modem. Microvitec colour monitor, twin 5.25in drives, software, Epson LQ80 printer, £300 ono. Tel: 071-586 2343

• A3000, fitted Arm3, 2Mb Ram, 20Mb hard disc, Acorn colour monitor, all manuals, original discs, beautiful machine: bargain £599, quick sale. Tel: (0707) 652834

• Electron with Plus 3 attachment, leads, tapes and discs, £100 ono. Tel: (0270) 626890

• Graphbox professional, competition prize, unopened and unused, £50. Tel: (0642) 592161

• BBC/Master compatible 40 track single-sided 5.25in disc drive, own PSU, £30. Tel: (0642) 588173

• Acorn Pocket Book, includes spell checker and manuals, as new, £130. Tel: 081-660 4085

• A310 with monitor, original spec, plus backplane and fan. Boxed, manuals, Apps discs, good condition. £300, no offers. Tel; (0272) 633090

• Master 128K, £185. Additional manuals, £15. Eprom eraser and programmer, £55. ATPL Rom board, £15. Tel: 081-441 9604

• BBC B+, Cumana 40/80 disc drive, educational software as well as games, magazines, leads, disc box, £150 ono. Will split. Tel: (0483) 576319

• Hard disc for A3000: 20Mb Oak SCSI complete with interface, £80. Tel: (0424) 844500

• BBC model B, DDFS 1.54T, double 40/80 disc drive (5.25in, 3.5in), joystick adaptor, many games, manuals, books, £90. Tel: 081-567 9518

• Wanted: educational software for BBC Master Compact to suit age 4+. Also 5.25in disc drive with knowhow to copy onto 3.5in disc. Tel: (0895) 675893

• Master 128, twin 5.25in disc drive, View, ViewSheet, games and educational software, very good condition, Philips CM8833 monitor, as new, £350 ono. Tel: (0620) 824099

• A3000 2Mb Ram, colour monitor, Learning Curve software, printer, video digitiser, £550. Tel: (0509) 852907

• Half price! A3000 2Mb, colour monitor, Learning curve, PC Emulator, DTP, WP, graphs + charts, games £450. Tel: (0252) 520781

• Acorn DTP, £15. 1st Word Plus v2,£15. ChartWell, £10. Genesis Plus, £10. ATPL Rom/Ram card 16K, £10. Wordwise Plus,£10. All boxed with manuals. Tel: (0925) 268984

• A440/1 with Arm3 and Risc OS 3.10, much PD software, £825 ono. Acorn colour monitor £100. Tel: (0272) 736237

• Wanted: BBC B or A3000 educational software (inc. Granny's Garden, World Map etc). Write to N Taugh, 20 The Highway, Moulsecoomb BN2 46B

• A300, 2Mb Ram, 20Mb IDE, Risc OS 3, colour monitor, Impression II, Eureka etc, Panasonic KX-P1081 printer, £675. Tel: (0203) 403478

• 40Mb Seagate ST151 hard drive, suit Archimedes 420/1, £70. Contact H D Boardman, 19 Southcliffe, Great Harwood, Lancs BB6 7PP

• Magazines for sale. Acorn User Apr 84 - Feb 88. Micro User Nov 84 - Dec 89. Beebug Mar 84 - Aug 89. Offers? Tel: (0764) 670674

• Wanted, contacts in Crowborough, Tunbridge Wells and Uckfield areas with view to information exchange A5000 compatible (we have CC FaxPack-modem). Tel: (0892) 663452

• Master 128 Turbo, ViewStore, SpellMaster. Hybrid Music System inc synthesiser, keyboard, expander, amplifier + speakers, KXP-1081 printer, Microvitec colour monitor, 40/80 5.25in disc drive, books, manuals much software. Would split. All excellent conditon. Originally cost around £2000 – offers? Tel: (0484) 654186

• A3000, Risc OS 3.1, stereo monitor, Arm 3, 4Mb, 42Mb hard disc, joysticks, sound sampler, lots of software and games, £1200. Contact Matthew Fuller, 66 North Rd East, Plymouth, Devon L4 6AL

• A3000, 2Mb Ram, Arm3 upgrade, serial port, 40Mb hard drive, second 3.5in floppy, £425 ono. Tel: (0628) 29871

• Archimedes games and educational software wanted for A3010. Tel: (0539) 724913

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• BBC B enhanced extra Roms (Wordwise, Replay etc), Cub colour monitor, Mannesman printer, twin 40/80 disc drives, joysticks, educational software, £260. Tel: 051-677 1654

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• BBC Master 128 with word processor and spreadsheet, 3.5in disc drive, opus colour monitor, anuals, immaculate £300. Tel: (0494) 530771

• Wanted, Archimedes computer, any model will do but must be in good working order. Tel: (0374) 153365

• A5000 Learning Curve, Risc OS 3,1, monitor and assorted software, all items mint condition and as new, £995. Tel: (0843) 601047

• BBC B, Watford DDFS, Wordwise Plus, 40/80 disc drive, 8K sideways Ram, many games on disc and tapes, £110 ono. Tel: (0234) 216883

• BBC B Issue 7, Challenger Ram disc/40-80 drive, sideways Rom/Ram, GLP printer, Interword, Intersheet, Interchart, The Music System, Elite, books, £150. Tel: 081-783 1208

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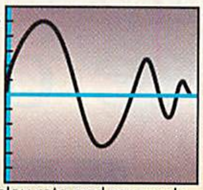
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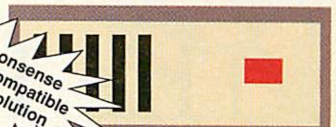
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The following are complete systems comprising of the NEW Desktop Projects IDE interface, hard disc, mounting brackets, cables, utilities disc and manual. **RISCOS 3.10 or later required.**

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SCSI

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330Mb 12ms Cache	£Call
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SCSI Controller Cards

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Acorn Software for all 32-bit RISCOS Computers

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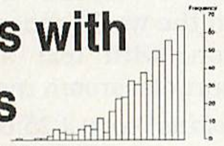


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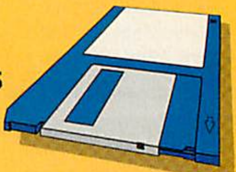
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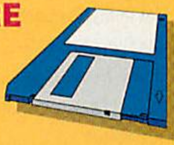
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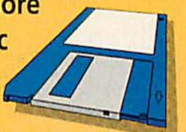
This classic game from leading games company, Fourth Dimension, combines flight simulation with gripping arcade action. Chocks Away sees you flying in a red Tiger Moth over landscapes and seascapes, blasting everything in sight. You can fly solo missions or with a friend: either way this rates as one of the all-time greats



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The *Acorn User* Shareware disc contains an essential selection of the best public domain and shareware software available, all with the full permission of the authors. Just look at what you can get for your machine:

ARMcode: For all you Arm code programmers, this little application converts between Arm mnemonics and the values they have in memory.

AutoFocus: Some Wimp-based systems automatically give the input focus to the window under the pointer, which can be invaluable if you are working on two documents and keep swapping between them. With *AutoFocus*, The caret moves with the pointer.

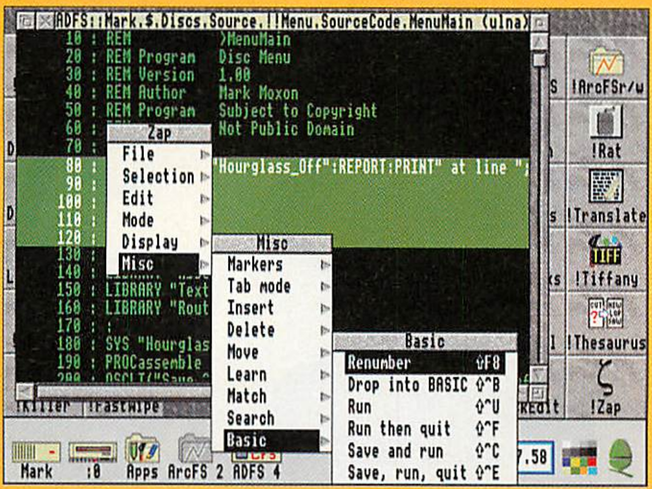
BlackHole: The best ever desktop dustbin. Use your dustbin as a way of deleting files, and if you suddenly realise you shouldn't have deleted something, you can always drag it back out of the bin.

FastBrot3: Possibly the fastest Mandelbrot set plotter for the Archimedes, this plots sets in a matter of seconds.

FileTree: This application displays the contents of discs in an easy-to-read hierarchical tree. With this type of display you can see the contents of your disc at a glance, and can search for missing files easily.

The Hacker: Contains hacks for the following games: Aldebaran, Arcade Soccer, Axis, Caverns, Spheres of Chaos, Cycloids, Elite, Fervour, Gods, Lemmings, Lotus Turbo Challenge 2, Mad Professor Mariati, Nebulus, Pacmania, Populous, Sim City, SWIV, Top Banana and Zool. Now you can cheat with confidence.

InfoScoop: Have you ever wanted to be able to point at a window, and instantly know all the gory details about it, like its window handle, its dimensions, all its window flags? Well, look no further than *InfoScoop*.



Makro: A neat little desktop application to save you typing the same text all the time.

Mode: Another handy little utility, this shows a small window containing eight numbers, which you can set up yourself. Clicking on any of these numbers changes the desktop screen mode to that number.

ModeView: This displays the mode number inside the Palette icon, so you'll always know the screen mode.

PostCalc: Calculate exactly how much it will cost you to send your packages, inland or overseas.

Process: A very comprehensive image processing packages, incorporating features found in some of the most expensive image processors in the commercial market.

PtrWrap: A simple program which makes the pointer 'wrap around' the screen: in other words, when you move the pointer off the edge of the screen, it reappears on the opposite side. Apparently, some people like the pointer to do this.

Status: If you've ever tried to write a multi-tasking program, you'll know how important it is to keep in touch with other programs in the Wimp environment. *Status* allows you to do just that, by monitoring any messages passed between applications.

WinCtrl: If you've wanted to be able to move windows without title bars, or scroll windows without scroll bars, the *WinCtrl* is for you. If you've tried to design a window in *FormEd* with no resize icon, you'll know how hard it is: but not with *WinCtrl*.

XHelp: This provides a complete hyper help system, with which you can create help files containing dynamic links to other parts of the text.

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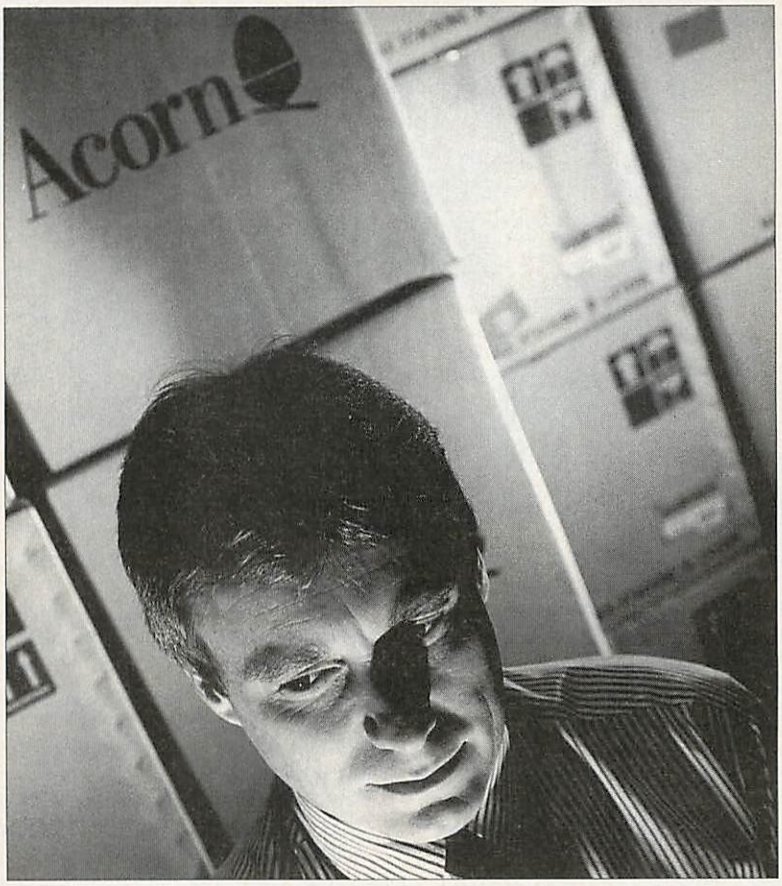
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THE MOXON INTERVIEW

ADRIAN CALCRAFT



ROBERT CLIFFORD

What is it about the computer industry? Most of the interviews I've done have been in rooms covered in bits of computer equipment, strewn casually over every surface. And this one's no exception.

Still, there is a good excuse this time: it's the Beebug Open Day, and Managing Director Adrian Calcraft's office has been taken over for the day, leaving us in another office which happens to be doubling as a storage area. All this activity looks promising for Acorn's largest consumer dealer, so I guess business is brisk in the lead-up to Christmas.

'We've been busier,' says Adrian, 'but it's not too bad. The A3010 is selling pretty well; until about four or five months ago, sales of that machine were very slow, but it's picked up towards Christmas.'

So, how's the market progressing with Acorn's new-found advertising tack? Dodgy videos aside, it seems that Acorn has actually started to sort its public image out.

'It's still the same old story, though,' Adrian points out. 'Acorn machines are really fantastic, but the Acorn market is driven by technology, not marketing. I think Acorn has a problem with catching people's imagination when it comes to their products. When we show people Acorns in action, they are suitably impressed; however, the majority of the public are persuaded by marketing, and they're buying other makes.

'The problem is that the Acorn platform hasn't got the big software names writing for it. We don't have a *dBase*, and we don't have a *Lotus*. Acorn hasn't sold enough machines to get the big players interested in developing software, and without the big software Acorn can't sell huge numbers of machines. A tricky situation.'

' The key to being a successful dealer lies in product support '

So what can the market do about this? The big packages you've talked about are all aimed at business use, rather than the home user. Is that the next direction that Acorn should be attacking, the business sector?

'Yes,' agrees Adrian, 'but at the moment there simply isn't any good business software available for Acorns. Somewhere there needs to be more money spent on development, but large companies aren't going to spend the money while there isn't a large enough user base to guarantee sales.'

So should Acorn be writing its own software?

'I don't think so: Acorn should stay as a computer manufacturer. Commissioning software is a way forward, but the problem lies with money.'

So what does a dealer do to try to increase sales? Box shifting is all very well, but there are a lot of Acorn dealers around, and with mail order making up a large part of Acorn sales, geographical position isn't such a factor any more.

'That's easy,' says Adrian. 'The key to being a successful dealer lies in product support. Computers need technical support, and this is an area we're really pushing: a company is only as strong as its staff, and our existing technical support and sales team really makes us the success we are.'

Would you ever consider charging for technical support? After all, if you don't charge for support, then you're having to pay your support team for a job which has no perceivable financial gain for the company.

'We've toyed with the idea of charging for support,' Adrian admits, 'but it's not really fair. It's different in the PC world, where most of the sales are into businesses. A business doesn't mind subscribing to a £50 support scheme: that's peanuts to them. On the other hand, if someone comes into our shop and buys a £40 product, do you really think they're going to consider paying for support?

'The point is that if someone buys something from us and receives excellent after-sales support, they'll come back to us. That's why it's worth providing technical support.'

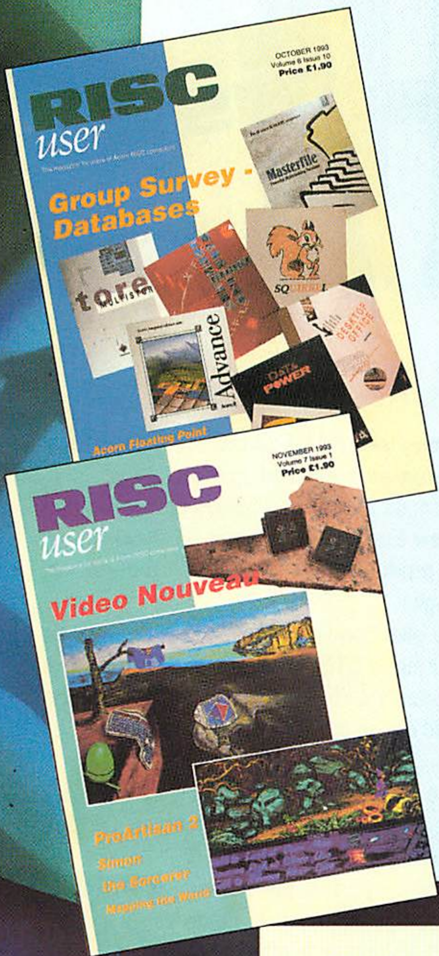
So with good technical support from dealers, can Acorn make it big in the business world?

'Maybe, if their marketing strategy was better,' says Adrian. 'They almost need to do an Amstrad: make loads of machines and bang them out at a really competitive price. Until then the market will continue to go along as it always has: a bit of a stalemate.'

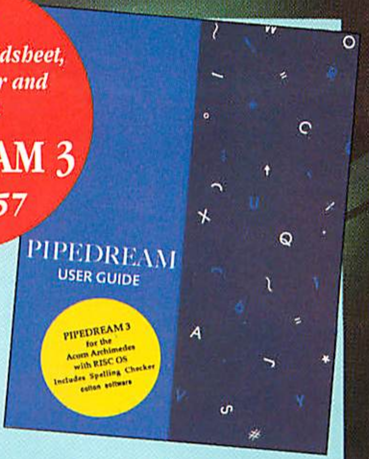
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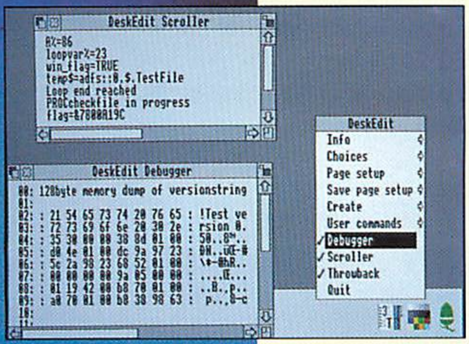


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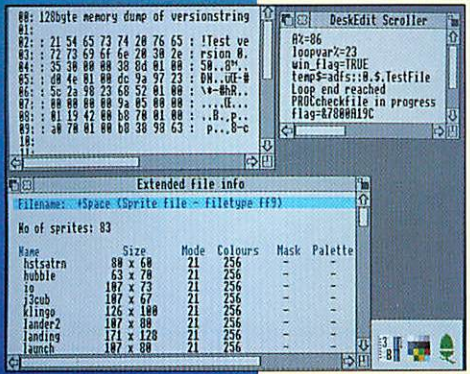
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